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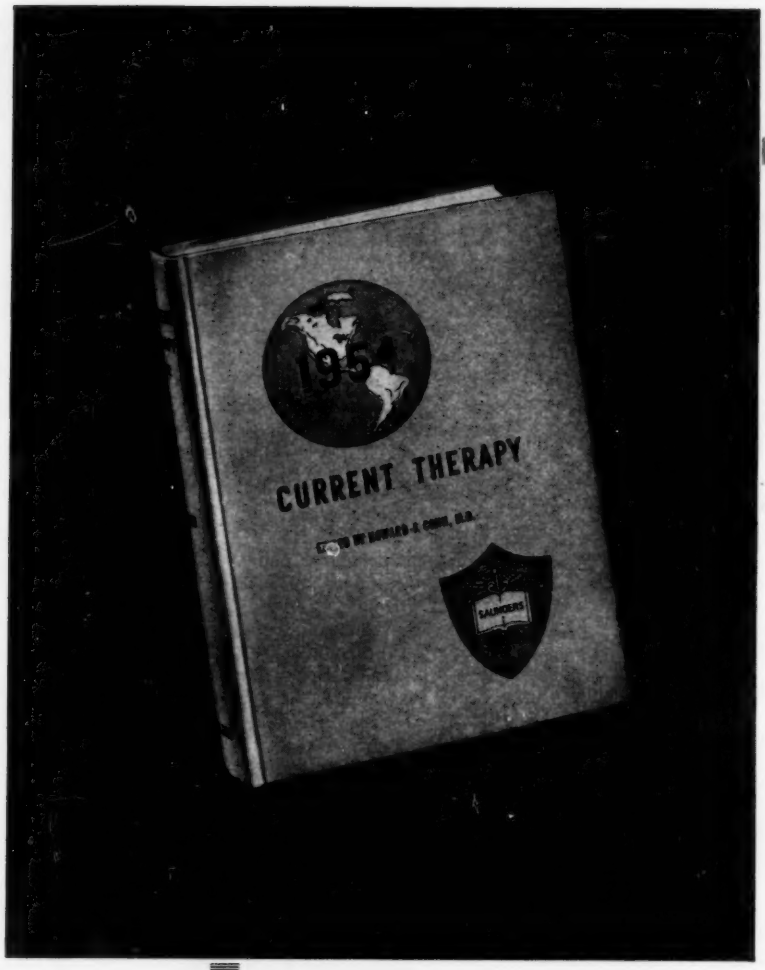

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POOLED PLASMA WITH LITTLE OR NO RISK OF HOMOLOGOUS SERUM JAUNDICE

J. Garrott Allen, M.D., Daniel M. Enerson, M.D., E. S. G. Barron, M.D.
and
Carolyn Sykes, R.N., Chicago

Pooled plasma can be prepared with little or no risk of homologous serum jaundice if certain practices now employed in its preparation are discontinued. The high attack rate of homologous serum jaundice among plasma recipients is a function of certain self-evident errors introduced by the methods chosen for plasma storage. When pooled plasma is dried, frozen, or refrigerated, homologous serum jaundice develops in from 5 to 22% of the recipients receiving transfusion. If a contaminated plasma pool is lyophilized (dried), frozen, or refrigerated, the activity of its virus is preserved indefinitely.[1] The source of virus contamination in a pool of plasma is the occasional unit of plasma derived from a donor who is a carrier of the virus. The carrier donor cannot be excluded by a history negative for hepatitis or jaundice or by laboratory tests. Therefore, all pools of plasma stored under conditions favorable to virus survival are potentially hazardous.

The virus of homologous serum jaundice in pooled plasma that has been stored in a liquid state at room temperature for six months becomes attenuated and seldom if ever transmits the disease.[2] Most viruses do not survive long when stored in a liquid cell-free medium at room temperature.[3] Virologists carefully avoid exposing viruses to such conditions when they desire to perpetuate virus activity. Had the biological principles governing virus survival been heeded, lyophilized, frozen, or refrigerated pooled plasma would not have been used until it could be demonstrated to be free of virus activity. Lyophilizing and freezing, which offer the best chance for survival of most viruses, are the methods most frequently employed for the storage of plasma. It should not be surprising that the virus of homologous serum jaundice has been preserved in lyophilized and frozen pooled plasma, which so frequently transmits the disease.

Room temperature storage of liquid plasma, however, has not been considered feasible, because it was assumed that the proteins of plasma would undergo early and serious deterioration. This assumption has not been subjected to laboratory scrutiny other than the study in 1944 by Lozner and Newhouser,[4] who observed only minor chemical changes in liquid plasma stored for three years.

In this paper is summarized an 11 year clinical experience with pooled plasma stored in liquid form at room temperature for six months or longer before use. No cases of homologous serum jaundice were known to develop when this was the only product administered. In addition, clinical and chemical data are presented. The chemical changes that occur in liquid plasma stored at room temperature do not appear to effect materially the usefulness of liquid plasma stored for reasonable periods of time.

CLINICAL EXPERIENCE

In table 1 are data relative to the incidence of homologous serum jaundice resulting from the administration of whole blood alone, from blood plus pooled liquid plasma, and from liquid pooled plasma alone. It will be noted that no homologous serum jaundice occurred in the group of patients receiving only the liquid pooled plasma stored at room temperature. During the same period 44 cases of homologous serum jaundice developed in the groups receiving whole blood alone or blood in combination with the plasma stored at room temperature. The incidence of homologous serum jaundice in the group of

From the Department of Surgery, University of Chicago.

1. Murphy, W. P., Jr., and Workman, W. G.: Serum Hepatitis from Pooled Irradiated Dried Plasma, J. A. M. A. **152**: 1421 (Aug. 8) 1953. Straus, B., and Torres, J. M.: Use and Abuse of Blood Transfusion, ibid. **151**: 699 (Feb. 28) 1953. Albrecht, R. M., and others: Serum Hepatitis Apparently Acquired from Irradiated Plasma, ibid. **152**: 1423 (Aug. 8) 1953. Allen, J. G., and others: Homologous Serum Jaundice and Its Relation to Methods of Plasma Storage, ibid. **144**: 1069 (Nov. 25) 1950.

2. (*a*) Allen, J. G.: Problems of Homologous Serum Jaundice After Plasma Transfusion, A. M. A. Arch. Surg. **64**: 1 (Jan.) 1952. (*b*) Allen, J. G.: Pooled Plasma and Homologous Serum Jaundice, Maryland M. J. **1**: 540, 1952. (*c*) Allen, J. G.; Inouye, H. S., and Sykes, C.: Homologous Serum Jaundice and Pooled Plasma: Attenuating Effect of Room Temperature Storage on Its Virus, Ann. Surg. **138**: 476 (Sept.) 1953.

3. Topley, W. W. C., and Wilson, G. S.: Topley and Wilson's Principles of Bacteriology and Immunity, revised by G. S. Wilson and A. A. Miles, ed. 3, Baltimore, Williams & Wilkins Company, 1946. van Rooyen, C. E., and Rhodes, A. J.: Virus Diseases of Man, New York, Thos. Nelson & Sons, 1948. Viral and Rickettsial Infections of Man, edited by T. M. River, New York, J. B. Lippincott Company, 1948. Seiffert, G.: Virus Diseases in Man, Animal and Plant, New York, Philosophical Library, Inc., 1944.

4. Lozner, E. L., and Newhouser, L. R.: Preparation of Normal Human Plasma in the Liquid State, J. Clin. Invest. **23**: 343, 1944.

patients receiving blood alone was substantially the same as that for those receiving blood plus liquid plasma stored six months before use. In none of the 54 patients given the remaining units from these five plasma pools did homologous serum jaundice develop. From these and other data [2c] it is concluded that homologous serum jaundice in the group receiving blood plus plasma was due to the blood they received rather than to plasma.

All patients in table 1 were observed for six months or longer in the University of Chicago Clinics after their last transfusion. The yearly reaction rate has been recorded month by month for liquid plasma and for blood during this same 11 year period. For plasma it averaged 0.53% of units given, and for blood it was 1.9% per total transfusions administered. These data were obtained from two sources: by "chart rounds" and interviews with patients receiving transfusion and while still in the hospital and by reports to the blood bank by the floor nurses and the medical staff. Most reactions were detected by the "chart rounds" procedure. No deaths occurred in the plasma group. Three occurred after transfusions with whole blood. Although most of the plasma

TABLE 1.—*Incidence of Jaundice According to Type of Transfusion, 1942-1953**

Type of Transfusion	No. of Units Used	No. of Patients Receiving Transfusion	No. of Cases of Homologous Serum Jaundice	Average Donor Exposure †
Blood only	37,026	10,610	39	3.5
Plasma only	1,546	315	0	52.2
Blood and plasma				
Blood	5,203	1,045	5	5.0
Plasma	6,124			44.6
Total	49,899	11,970	44	...

* Total units of blood pooled and administered as plasma, 19,524.
† Average number of donors to whom any one patient was exposed.

administered during this time was given for the correction of hypoproteinemia in patients unable to eat,[5] it was also given for the treatment of wounds, burns, and/or hemorrhagic shock, where it proved as effective as other types of plasma in the treatment of these shock states.

All plasma was prepared from outdated citrated whole blood between the fifth and eighth days after drawing. ACD (anticoagulant acid citrate dextrose) solution was not used, and no antiseptics or antibiotics were employed. Separation from the erythrocyte mass was by sedimentation rather than by centrifugation. All pools of plasma were cultured for both aerobic and anaerobic bacteria; 4% of all pools were found to be contaminated. A pool consisted of from 25 to 32 donors and was limited by the 6 liter capacity of the Pyrex container used. All donors were questioned regarding a history of jaundice or hepatitis. No donor with a history of either complaint was knowingly allowed to give blood.

SURVEY DATA FROM OTHER BLOOD BANKS

In table 2 is listed the experience of other blood banks with reference to the types of pooled plasmas used and the number of patients in whom homologous serum jaundice is known to have developed. These data were compiled from a recent questionnaire circulated by the American Association of Blood Banks and from published reports.

Of note is the fact that all of the cases of homologous serum jaundice occurred as a result of only 13% of the plasma given. This 13% was comprised of pooled plasma that had been dried, frozen, or refrigerated. The remaining 87%, or 191,887 units, of pooled plasma had been stored at room temperature in a liquid state for three

TABLE 2.—*Questionnaire Data from 124 Blood Banks*

Pooled Plasma	Units	Known Cases Homologous Serum Jaundice	% of Total Plasma Used	Total Cases Homologous Serum Jaundice
1. Dried	23,041	236	13%	259
2. Frozen	775	2		
3. Refrigerated	1,431	21		
4. Liquid room temperature stored	191,887	0	87%	0
5. Blood transfusions	1,248,439			544

to nine months before administration. No cases of homologous serum jaundice were reported for this group. At the same time, these same blood banks reported 544 cases of homologous serum jaundice from the administration of 1,248,439 units of blood. Sixty-two of the blood banks reporting had used all four methods of plasma storage. Thirty were using no plasma.

CHEMICAL STUDIES

Listed in table 3 are data from analyses of certain plasma constituents on plasma samples ranging in age from 2 months to 10½ years. The total protein content for each plasma pool varied to some extent and in accordance with the number of donors contributing to any one pool. In some instances, less than 500 cc. of blood was obtained from a given patient, yet the 75 cc. of citrate

TABLE 3.—*Protein Content of Pooled Plasma Stored at Room Temperature for Varying Periods*

Period of Storage, Yr.	Sample No.	Total Protein Concentration, Gm. per 100 Cc.	Percentages of Total Proteins Expressed as Percentage of Total Protein Concentration *					
			Albumin	Alpha Globulin			Beta Globulin	Gamma Globulin
				L_1	L_2	L_3		
10 9/12	1	5.95	57.2	10.6	14.3	...	9.2	8.8
10	2	5.52	57.8	8.0	15.6	...	10.3	8.3
7	3	5.88	57.6	9.7	10.6	3.6	7.6	10.9
6	4	5.97	59.9	9.3	12.6	...	9.3	8.9
2 9/12	5	6.22	48.1	10.2	12.1	...	14.1	15.6
2	6	6.76	42.5	10.1	12.2	...	18.3	16.9
1 9/12	7	6.28	50.4	10.1	11.4	...	13.6	14.5
1 9/12	8	6.08	54.6	6.9	5.3	9.1	13.4	10.7
1 3/12	9	5.49	46.7	9.1	13.0	...	17.4	13.8
1	10	6.39	50.4	8.4	11.5	...	18.1	11.5
9/12	11	5.72	50.8	6.4	13.8	...	16.3	12.8
4/12	12	6.71	48.0	9.7	11.2	...	15.7	15.4
2/12	13	6.28	49.7	4.9	8.7	8.0	17.0	11.8

* Calculated from electrophoretic patterns.

solution remained constant. Therefore, when several "short" bloods were added in a plasma pool, the resulting plasma was diluted more than usual by the constant citrate volume.

The changes in the percentages of the various protein fractions are shown in table 4. In general, a slight increase in albumin concentration slowly developed over the 10½ year period. Proportionately, the alpha globulin increased to a greater extent. Both beta and gamma globulin, how-

5. Enerson, D. M., and Allen, J. G.: Homologous Serum Jaundice in Pooled Liquid Plasma Stored at Room Temperature, A. M. A. Arch. Surg., to be published.

ever, decreased about 50 and 25% respectively after 10½ years, but there was little detectable change short of 2½ years. Since the beta and gamma fractions are large protein molecules and normally exert less effect on osmotic pressure, their deterioration was found to have no remarkable influence on the osmotic pressure potential. The protein changes did not appear until after 24 months, and they appear to explain the accentuation of the electrophoretic peak associated with the albumin peak in the older plasma. The most pronounced changes occurred between the 30th and 60th months, after which little change was detected through the 126th month (10½ years).

In table 5 are summarized the data computed from electrophorectic studies as related to Kjeldahl values. Here again the changes in protein values appear similar to those reported by Lozner and Newhouser [4] after three years of plasma storage at room temperature. It will be noted as the age of plasma increased beyond three years, the changes in the globulin become more pronounced.

TABLE 4.—*Electrophoresis Results**

Period of Storage, Yr.	Sample No.	Total, Gm. per 100 Cc.	Albumin		Globulins									
					Alpha Globulin						Beta Globulin		Gamma Globulin	
					L_1		L_2		L_3					
			%	Gm. per 100 Cc.	%	Gm. per 100 Cc.	%	Gm. per 100 Cc.	%	Gm. per 100 Cc.	%	Gm. per 100 Cc.	%	Gm. per 100 Cc.
10 9/12	1	5.95	57.2	3.40	10.6	0.63	14.3	0.85	...	....	9.2	0.55	8.8	0.52
10	2	5.52	52.6	2.90	8.0	0.44	16.0	0.88	...	....	9.2	0.51	14.3	0.79
			57.8	3.19	8.0	0.44	15.6	0.86	...	....	10.3	0.57	8.3	0.46
7	3	5.88	57.6	3.39	9.7	0.57	10.6	0.62	3.6	0.21	7.6	0.45	10.9	0.64
6	4	5.97	59.9	3.58	9.3	0.56	12.6	0.75	...	....	9.3	0.56	8.9	0.53
2 9/12	5	6.22	48.1	2.98	10.2	0.63	12.1	0.75	...	....	14.1	0.88	15.6	0.97
2	6	6.76	42.5	2.87	10.1	0.68	12.2	0.83	...	....	18.3	1.24	16.9	1.14
1 9/12	7	6.28	50.4	3.27	10.1	0.45	11.4	0.74	...	....	13.6	0.88	14.5	0.94
1 9/12	8	6.08	54.6	3.32	6.9	0.42	5.3	0.32	9.1	0.56	13.4	0.49	10.7	0.65
1 3/12	9	5.49	46.7	2.57	9.1	0.49	13.0	0.72	...	....	17.4	0.96	13.8	0.76
1	10	6.39	50.4	3.22	8.4	0.54	11.5	0.73	...	....	18.1	0.80	11.5	0.73
9/12	11	5.72	50.8	2.90	6.4	0.37	13.8	0.79	...	....	16.3	0.64	12.8	0.73
4/12	12	6.71	48.0	3.22	9.7	0.65	11.2	0.75	...	....	15.7	0.62	15.4	1.03
2/12	13	6.28	49.7	3.12	4.9	0.31	8.7	0.55	8.0	0.50	17.0	0.54	11.8	0.74

* Values expressed as percentage of total protein concentration (obtained by Kjeldahl analyses of fractions).

The amino nitrogen continued to increase without interruption and at a fairly constant rate throughout the entire storage period, as demonstrated in table 4. This indicates a slow breakdown of protein. The increase of amino nitrogen was from 2.11 mg. per 100 mg. of total nitrogen to 6.62 mg. per 100 mg. of total nitrogen.

The most labile of the plasma protein constituents appeared to be the clotting components. Prothrombin activity and fibrinogen disappear. Measurements of accelerator globulin and the antihemophilic globulin were not made, as both of these substances are known to deteriorate. Since plasma is used for the treatment of shock and not for treatment of abnormal bleeding, loss of its clotting properties is considered clinically unimportant.

In addition, there are two changes in the gross appearance of liquid plasma stored at room temperature that should be mentioned but that have proved of no clinical importance. Beginning from 2 to 12 months after the storage period is instituted, a gel appears that redissolves or lyses between the 18th and 36th month. This, in part at least, is fibrin-like. It is usually a fragile gel and seldom becomes bulky. It is readily removed by the usual filters used in blood administration sets. A thin, powder-like white sediment also appears at the bottom of the bottles of liquid plasma and remains permanently. It is harmless and does not impair in any manner the administration of such plasma. Some, who are unaccustomed to liquid plasma, are disturbed by the variations in color different lots of liquid assume. Colors range from a golden yellow to an opalescent green; these colors are best seen in the large pools but are scarcely noticeable in the smaller 500 cc. units. The final product remains transparent, however, except for the thin gel and for the small amount of white precipitate which is resuspended when agitated. None of the emulsion properties of reconstituted dried plasma are seen.

In the figure is shown the plasma protein response to administration of three types of plasma to three hypoproteinemic patients. These three types of plasma were: liquid plasma stored at room temperature and aged six months before administration, liquid plasma stored at room temperature and aged three years before administration, and reconstituted dried plasma. The increase in protein concentration in these three patients was similar and the clinical improvement comparable. In the case of the patient receiving the dried plasma, however, homologous serum jaundice developed four months later. No other detectable difference was evident.

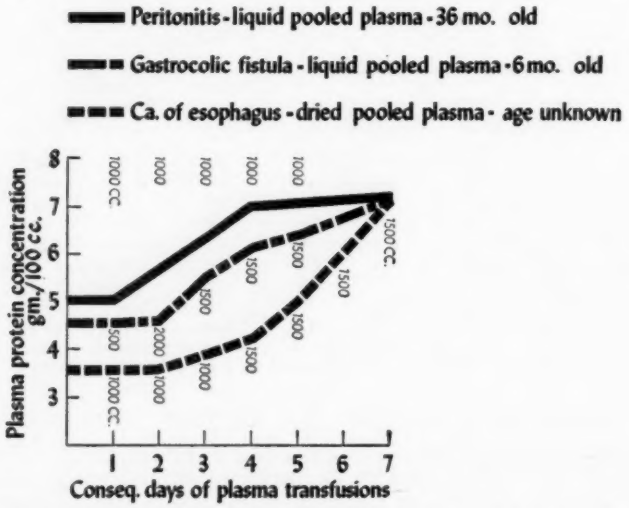
TABLE 5.—*Free Amino Acid Content of Same Pool Plasma Samples Stored at Room Temperature for Varying Periods*

Period of Storage, Yr.	Sample No.	Total Nitrogen, Mg. per 100 Cc.	Amino Nitrogen, Mg. per 100 Cc.	Amino Nitrogen in 100 Mg. of Nitrogen
10 9/12	1	952	63.0	6.62
10	2	884	54.0	6.11
7	3	942	46.7	4.96
6	4	956	38.9	4.07
2 9/12	5	997	34.8	3.49
2	6	1,080	35.8	3.31
1 9/12	7	1,037	30.3	2.92
1 9/12	8	973	31.4	3.22
1 3/12	9	880	34.1	3.88
1	10	1,021	32.4	3.17
9/12	11	916	28.9	3.15
4/12	12	1,073	21.8	2.03
2/12	13	997	21.0	2.11

COMMENT

Tables 1 and 2 establish the fact that there is little, if any, risk of homologous serum jaundice in the administration of pooled plasma after it has been stored at room temperature for six months prior to administration, providing the donors were healthy and met the National Institutes of Health requirements at the time they made their donation. The data presented in table 2 obviously represent but a small proportion of the number of patients in whom homologous serum jaundice developed after the administration of blood and/or plasma. The blood banks reporting their data acknowledged this defect. Since no cases of homologous serum jaundice developed in the patients receiving liquid plasma stored at room temperature, any assumed greater attack rate will increase the attack rate for dried, frozen, or refrigerated plasma without affecting the attack rate for liquid plasma. As yet, no data have been published that provide a rational basis to question the safety of liquid plasma.

If, however, the donor requirements of the National Institutes of Health are set aside and pools of plasma are


Peritonitis - liquid pooled plasma - 36 mo. old
Gastrocolic fistula - liquid pooled plasma - 6 mo. old
Ca. of esophagus - dried pooled plasma - age unknown
Plasma protein concentration gm./100 c.c.
Conseq. days of plasma transfusions

Plasma protein response to administration of three types of plasma to three patients with hypoproteinemia.

deliberately contaminated with plasma drawn from patients sick with homologous serum jaundice at the time of their donations, a period slightly longer than six months appears necessary to render this highly virulent product free of risk of homologous serum jaundice. Attesting this conclusion are the human volunteers of Murray and co-workers,[6] who were inoculated with pooled plasma intentionally contaminated by plasma from donors sick with homologous serum jaundice when their blood was withdrawn. For this plasma, so highly contaminated, the attack rate was 52%. This was not changed by three months' storage at room temperature; however, after six months this highly virulent plasma nearly lost its infectivity. Its attack rate was reduced from 52% to 5%. Of 20 volunteers given this material, in only one did homologous serum jaundice develop. The disease in this patient was unique in that the incubation period was 196 days, which is the longest on record and which is further evidence of the mild residual virulence. The attack also was mild. It is not surprising that a pool of plasma contaminated with so highly virulent a virus should require a slightly longer storage period to abolish its virus activity than when the virus is the usual "carrier" type. It is clear that a little longer storage would "sterilize" completely this intentionally contaminated plasma.

Studies of the physiochemical and biochemical aspects of citrated liquid pooled plasma stored for a few months to 10½ years indicate its stability. The results herein reported were also independently duplicated in 1952 by Chanutin at the University of Virginia. His studies on our plasma were performed at the request of the National Research Council. According to Chanutin,[7] "Aged plasma collected in citrate (without A.C.D.) showed comparatively small changes in the electrophoretic pattern" when stored for six months to eight years. These minor changes affect the larger protein molecules, principally the globulins, and as first described by Lozner [4] in 1944 result in a plasma that has a greater osmotic pressure after three years of standing than it originally possessed. The stability of pooled citrated plasma permits its storage in a liquid state at room temperature for at least three years without interference with its clinical usefulness. Clinical data are not available for plasma stored for greater periods of time.

Because of its stability and safety, the storage of pooled liquid plasma at room temperature for six months or longer becomes an inexpensive and practical means of inactivating the virus of homologous serum jaundice. Thereafter this plasma can be lyophilized without difficulty if it is desired to store the product indefinitely. The clotting factors, however, are lost too rapidly at room temperature storage to be useful in the treatment of disorders of coagulation. This is not objectionable, since fresh plasma is of little benefit in the treatment of abnormal bleeding disorders other than hemophilia. Prothrombin in dried plasma deteriorates on standing although much more slowly than in liquid plasma. Coagulation disorders that respond to plasma components are best treated by the administration of appropriate plasma fractions rather than by the administration of the intact product. To date, this appears to be one of the reasons why some plasma should be fractionated. While the plasma fractions have proved invaluable as a tool for research and have been very useful in certain limited clinical fields, it should be recognized that the current fractionated procedure reclaims little more than half of the available serum albumin and a much smaller percentage of transfusable globulin proteins. This extravagance of protein is acceptable for reclaiming contaminated plasma and placental blood that otherwise would be lost, but this loss becomes intolerable indeed in planning for the efficient use of plasma for national defense or for meeting the needs of the community hospital. The usefulness of pooled plasma is so great and its cost is so little that we can ill afford to throw it away.

SUMMARY

The storage of pooled plasma in a liquid state for six months at room temperature carries no demonstrated risk of homologous serum jaundice, provided donor selection

6. Murray, R.: The Problem of Reducing the Danger of Serum Hepatitis from Blood and Blood Products, Chicago, American Association of Blood Banks, October, 1953.

7. Chanutin, A.: Personal communication to the author, October, 1953.

excludes those with history of hepatitis or jaundice in accordance with the standards set up by the National Institutes of Health. The room temperature storage procedure appears suitable to eradicate even the virus activity of pooled plasma intentionally contaminated with the highly virulent plasma obtained from donors who have homologous serum jaundice when their blood is withdrawn. If the National Institutes of Health donor standards are to be ignored to this extent, a period of storage a little longer than six months may be necessary to offset the unusual virulence encountered in such plasma.

Chemical studies of liquid pooled plasma show no clinically significant alteration after room temperature storage for 30 months. Clinical studies reveal this plasma to be as useful in the prevention or treatment of shock or hypoproteinemia as freshly prepared liquid or dried plasma. After six months to nine months of room temperature storage, when its virus activity has died out, liquid plasma can be lyophilized if desired. While storage of liquid pooled plasma for six months at room temperature provides a safe, simple, and inexpensive means for the preparation of plasma, this procedure is not adaptable to whole blood.

TREATMENT OF ACUTE MYOCARDIAL INFARCTION WITH PARTICULAR REFERENCE TO SHOCK

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Acute myocardial infarction is the cardiac emergency that most frequently confronts the physician. The pathophysiological mechanism may be coronary thrombosis, acute coronary occlusion, or prolonged ischemia in the absence of coronary closure.[1] Since the myocardial infarct is the pathological lesion responsible for the clinical syndrome, and since the presence, absence, or exact character of the arterial occlusion cannot be diagnosed clinically, it is more accurate to use the term "acute myocardial infarction" rather than alternative designations such as coronary thrombosis, coronary occlusion, or coronary insufficiency. Regardless of the causal mechanism, the general principles underlying the treatment of acute myocardial infarction are essentially the same. The aims of treatment are to provide optimum rest of the patient's heart in order to promote healing of the infarct and to prevent further damage by protecting the patient and his heart from undue strain until a firm scar has been established and adequate collateral circulation has had an opportunity to develop. The sequence of pathological changes that occur in the heart have been clearly delineated and are an invaluable orientation in clinical management. During the first week after acute myocardial infarction, dissolution of muscle fibers with invasion of polymorphonuclear leukocytes dominates the scene. During the second week this process continues and fibroblastic activity is first seen. Connective tissue formation continues, with the establishment of a firm scar by the end of six weeks. Collagen is first deposited in the second week and is not complete until approximately three to four months after acute myocardial infarction.[2] The available evidence indicates that intercoronary collateral channels develop within 10 days and progressively increase.

Complete rest, physical and mental, is essential, particularly during the first two weeks, when the muscle wall is weakest and ventricular rupture is most likely to occur.[3] For most patients one month of full rest and one month of gradually increasing activity and, when possible, a third month of continued convalescence before undertaking work are advisable. As P. D. White has cogently stated, "During the last two decades the pendulum has swung from one extreme to the other with respect to the length of time at full rest and of total convalescence from two or three months of the former and six months to a year of the latter to a few days only at rest and a few weeks only away from work. The wisest course is doubtless to avoid both these extremes." [4] As in all matters of treatment, the general plan will be modified by the physician in the light of common sense and sound judgment in evaluating the size of the infarct, the presence or absence of congestive failure or other complications, the personality of the patient, and the social and economic environmental factors. Manifestly, the tense hyperactive patient rebellious against his condition and enforced confinement may secure more actual rest with a more lenient regimen.

RELIEF OF PAIN

Pain should be promptly relieved by the use of morphine sulfate or meperidine (Demerol). Fifteen milligrams should be given subcutaneously at half hour intervals until the desired effect is attained. The total dose should not exceed 65 mg. The effect of each dose should be carefully observed before administering the next dose. If the pain is intense, 30 mg. should be given hypodermically at once. If the situation is critical, slow intravenous injection of 15 mg. is advisable. If an idiosyncrasy to morphine and related compounds is present, meperidine, in doses of 75 to 100 mg., or one of the

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This study was supported in part by the Sydney Green Cardiac Research Fund.

1. Blumgart, H. L.; Schlesinger, M. J., and Zoll, P. M.: Angina Pectoris, Coronary Failure and Acute Myocardial Infarction: The Role of Coronary Occlusions and Collateral Circulation, J. A. M. A. **116**: 91 (Jan. 11) 1941.

2. Mallory, G. K.; White, P. D., and Salcedo-Salgar, J.: Speed of Healing of Myocardial Infarction: Study of Pathologic Anatomy in 72 Cases, Am. Heart J. **18**: 647, 1939.

3. Wessler, S.; Zoll, P. M., and Schlesinger, M. J.: The Pathogenesis of Spontaneous Cardiac Rupture, Circulation **6**: 334, 1952.

4. White, P. D.: Heart Disease, ed. 4, New York, the Macmillan Company, 1951, p. 562.

newer preparations such as methadone in doses of 15 mg. may be administered by mouth or subcutaneously. For minor discomfort codeine may suffice. If the patient is restless, phenobarbital in 15 or 30 mg. doses three or four times a day, or one of the other barbiturates may be used, making the use of stronger narcotics unnecessary.

Recurrent pain must be regarded as a sign of continuing myocardial ischemia and necrosis. Such additional necrosis for days after initial infarction is common in patients who fail to survive and is a major complication. Rest and oxygen therapy are important in the effort to limit the amount of infarcted muscle. Oxygen therapy is indicated in all moderate or severe cases, always when the pain is resistant to other measures, and whenever cyanosis is present. Dyspnea is relieved, pain is lessened, the heart rate is slowed, and not infrequently the patient lapses into quiet, restful sleep. Aminophylline (theophylline ethylenediamine), 0.48 gm., or papaverine hydrochloride, 0.03 to 0.09 gm., administered by slow intravenous injection, has been recommended when pain is not relieved by the previously mentioned methods.

THERAPY

Digitalis should be administered to all patients with evidences of congestive failure or with rapid ventricular rates due to auricular fibrillation or auricular flutter. If the patient has had no prior digitalis medication, moderately rapid digitalization can be accomplished by 0.6 mg. of digitoxin orally, followed by 0.2 mg. every four or six hours, until the desired effect is obtained. Occasionally, when rapid emergency digitalization is necessary, lanatoside C, 0.8 mg. followed by 0.2 to 0.4 gm. every two hours as indicated, or even a single digitalizing dose of 1.6 mg. may be given. It is excreted within 72 hours. The daily oral maintenance dose is 0.5 to 1.0 mg. In the absence of the above definite indications, it is unwise to use digitalis because of the possible induction of arrhythmias or gastrointestinal symptoms. In the presence of congestive failure, procaine penicillin G, 300,000 units once daily, or one of the other long-acting preparations should be used to prevent pulmonary infection. Mercurial diuretics such as mercaptomerin (Thiomerin) in doses of 1 or 2 cc. and restriction of salt may be used to control mild congestive failure and may render digitalization unnecessary.

Quinidine sulfate has been routinely advised to minimize the possible development of paroxysmal tachycardia or fibrillation. The drug is not without occasional adverse effects, such as nausea, vomiting, or diarrhea. In moderate dosage this drug may also cause a fall in blood pressure in some patients with acute myocardial infarction. The routine use of quinidine is, therefore, not advisable. In the presence of extrasystoles, however, its administration should be attempted in doses of 0.2 to 0.4 gm. every three or four hours. If gastrointestinal symptoms are induced, enteric coated preparations may be used or paregoric may be given to control cramps and diarrhea. Procaine amide hydrochloride is also effective in the treatment of extrasystoles, particularly ventricular premature contractions, in doses of 0.25 to 0.5 gm. by mouth at four to six hour intervals. In the treatment of paroxysmal ventricular tachycardia an initial dose of 1 gm. followed by 0.25 to 0.5 gm. orally at four to six hour intervals is usually adequate; 0.7 to 1.0 gm. may be administered intramuscularly. In critical situations slow intravenous injection of 250 to 1,000 mg. at a rate not greater than 100 mg. per minute may be necessary. During intravenous administration unpredictable hypotension and death may occur. Repeated observations of blood pressure and electrocardiographic tracings should be made and a vasopressor agent such as arterenol should be immediately available. Glyceryl trinitrate (nitroglycerin) is hazardous in the acute phase of acute myocardial infarction and should not be used. If the patient is first seen in his initial attack of cardiac pain, this drug should not be administered until the possibility of acute myocardial infarct has been excluded. In the presence of fresh coronary occlusion, administration of glyceryl trinitrate may lead to a fall in blood pressure and precipitate massive infarction or death.

A low caloric intake of approximately 1,000 calories and consisting of readily ingestible and digestible foods is indicated during the first two or three days. Fruit juices, milk, ginger ale, ice cream, custards, eggs, and toast may be given. Fluids sufficient to produce a daily urinary output of 1,500 cc. and restriction of salt to 2 gm. or less daily are indicated. The bowels may be neglected at the onset, but one of the heavier mineral oils or emulsified preparations should be prescribed in 30 cc. doses once or twice daily to avoid the discomfort of constipation and abdominal distention. If constipation requires treatment, a glycerin suppository or a retention enema of 90 cc. of plain mineral oil may be administered in the evening. If cathartics later prove necessary, one of the milder saline laxatives is preferable. Straining at stool must be avoided. The use of a commode entails less effort than the use of a bed pan and should be employed unless the patient is too critically ill to be transported or the patient utilizes a bed pan without undue strain or discomfort. The bed pan may be used at the edge of the bed with the patient resting his feet over the side of the bed on a chair. Anticoagulant therapy, consisting of bishydroxycoumarin (Dicumarol) or allied drugs, alone or in combination with heparin, has been shown by Wright,[5] Allen,[6] and others to diminish the incidence of thromboembolic complications and to lower the mortality rate. Without a full knowledge of the pharmacological characteristics, contraindications, and inherent dangers of these drugs, and unless reliable laboratory measurements are available, their use is hazardous and should be avoided. These drugs are contraindicated in the presence of serious hepatic or renal disease, peptic ulcer, ulcerative colitis, any of the hemorrhagic blood diseases, and other states such as recent cerebral hemorrhage when an intact hemostatic mechanism may be vital. In recent years strong evidence has been brought forward[6] that anticoagulant therapy is unnecessary in "good risk" patients. Included in this group are patients who, when first seen, appear on the basis of history and symp-

5. Wright, I. S.; Marple, C. D., and Beck, D. F.: Anticoagulant Therapy of Coronary Thrombosis with Myocardial Infarction, J. A. M. A. **138**: 1074 (Dec. 11) 1948.

6. Allen, E. V.; Barker, N. W., and Waugh, J. M.: A Preparation from Spoiled Sweet Clover [3, 3' Methylene-Bis-(4-Hydroxycoumarin)] Which Prolongs Coagulation and Prothrombin Time of the Blood: A Clinical Study, J. A. M. A. **120**: 1009 (Nov. 28) 1942. Russek, H. I.; Zohman, B. L.; White, L. G., and Doerner, A. A.: Indications for Bishydroxycoumarin (Dicumarol) in Acute Myocardial Infarction, J. A. M. A. **145**: 390 (Feb. 10) 1951.

toms to have a small and not severe lesion, and those who are having their first attack and do not manifest arrhythmias, congestive failure, thrombotic complications, or evidence of shock. Bishydroxycoumarin is administered orally. The first day 200-300 mg. is usually administered. A single dose of bishydroxycoumarin requires 24 to 48 hours to attain its maximum effect; therefore subsequent dosage is gaged each day after the daily prothrombin report is available. The second day, 200 mg. is usually given and 50 to 100 mg. on subsequent days to maintain the prothrombin time at approximately 30 seconds, corresponding to 10% of normal. When the prothrombin time is 30 to 35 seconds, the drug is omitted for the day. Anticoagulant therapy usually is maintained for 21 to 28 days. If pericarditis occurs, anticoagulant therapy should be stopped. Constant vigilance must be exercised for hemorrhagic phenomena, including microscopic or gross hematuria or blood in the stools. Similar caution must be observed with other anticoagulants such as ethyl biscoumacetate (Tromexan) and phenindione.

Heparin has been recommended in doses of 75 mg. every four hours or by constant intravenous drip during the first 24 to 48 hours until the action of bishydroxycoumarin becomes manifest, particularly if the patient is first seen several days after the onset. The use of elastic stockings, passive movements of the legs, turning the patient, and having him take deep breaths to prevent stasis of blood and expand the lungs are important adjuncts in treatment.

TREATMENT OF CERTAIN COMPLICATIONS

Shock is a frequent and dangerous complication. Cold, clammy perspiration, grey cyanosis, weakness, faintness, a lowered blood pressure, thready pulse with pulse pressure of less than 25 mm. Hg, nausea, and occasionally vomiting are the important manifestations. The fall in blood pressure is the cardinal sign. The cardiac rate is almost always rapid, but bradycardia is occasionally observed. Shock generally follows the pain of acute myocardial infarction immediately or after many hours or days. The mortality of those patients who manifest severe shock has been stated to be 80%, but with modern treatment the mortality can be significantly decreased. A fall in blood pressure does not of itself constitute shock unless other clinical manifestations above noted are present. Indeed, an occasional patient after acute myocardial infarction with systolic blood pressures of 80 to 90 mm. Hg may have warm extremities, be comfortable, and recover uneventfully. Since our understanding of the pathological physiology of shock is incomplete and cardiopulmonary reflex factors, as well as reduced output and peripheral vasomotor collapse, are implicated, the program of treatment is in part empirical and in part aimed at correcting some of the major pathophysiological abnormalities. The two main derangements are the lowered cardiac output and the peripheral vascular collapse with reduced venous return, each tending further to perpetuate and accentuate the other.[7] Depending on the degree and duration of shock, secondary metabolic and morphological consequences in practically all the organs of the body, including the heart itself,[7a] are prone to occur.

Application of elastic bandages to the legs from ankle to midthigh may be of value. Elevation of the foot of the bed has been recommended but is rarely practicable or advisable, as congestive failure is frequently present and the position is not tolerated by these dyspneic, apprehensive patients. Continuous administration of oxygen in concentrations of 50 to 90%, with use of a face mask or an oxygen tent, is indicated. If the patient is restless, anxious, or suffering pain, meperidine, 50 or 75 mg. parenterally, to be repeated if necessary at half or one hour intervals, is indicated. Morphine sulfate should be used only in the presence of great pain. The foregoing measures may suffice in the treatment of shock.[7b] In fact, some patients recover spontaneously from mild or even moderate shock. Moderate to severe shock, however, with systolic blood pressures below 80 mm. Hg may become irreversible or refractory to all methods of treatment within an hour. Energetic treatment with vasopressor drugs, plasma, or whole blood is more likely to achieve favorable results the earlier it is begun. Procrastination is perilous.

If the patient is dehydrated and the peripheral venous pressure is low, as shown by collapsed veins, intravenous infusion of 5% dextrose in isotonic sodium chloride is indicated with the administration of vasopressor drugs, particularly after profuse perspiration or vomiting. In the presence of anemia, transfusions of blood in amounts of 200 to 250 cc. should be given in refractory situations and repeated as necessary to maintain a systolic blood pressure at or above 100 mm. Hg; careful observation of signs of pulmonary edema or rise in peripheral venous pressure must be made. When peripheral vascular collapse and normal hemoglobin values are present, plasma rather than blood should be used. Intra-arterial transfusions have been recommended, but their superiority to the regimen outlined here has not been demonstrated.

The clinical usefulness of vasopressor drugs in combating shock in acute myocardial infarction has become increasingly apparent. In contrast to epinephrine some of these preparations, such as *l*-arterenol, do not increase the cardiac output, do not produce tachycardia or affect cardiac irritability, but nevertheless cause marked peripheral vasoconstriction and restoration of more normal blood pressure levels. Methoxamine and mephentermine (Wyamine) sulfate may be used intramuscularly as well as intravenously. Repeated injections may be given to maintain the systolic pressure at approximately 100 mm. Hg or, in the instance of previously hypertensive patients, at somewhat higher levels. Hydroxyamphetamine (Paredrine) is given in dosage of 10 to 20 mg. intramuscularly, or 5 to 10 mg. intravenously. The dosage of phenylephrine (Neo-Synephrine) is 5 mg. intramuscularly or intravenously in dilute solution at intervals of 15 minutes to an hour.[8] The intravenous route should be used only

7. Wiggers, C. J.: Myocardial Depression in Shock: Survey of Cardiodynamic Studies, Am. Heart J. **33**: 633, 1947. Mylon, E.; Cashman, C. W., Jr., and Winternitz, M. D.: Studies on Mechanisms Involved in Shock and Its Therapy, Am. J. Physiol. **142**: 299, 1944. Fishberg, A. M.; Hitzig, W. M., and King, F. H.: Circulatory Dynamics in Myocardial Infarction, Arch. Int. Med. **54**: 997 (Dec.) 1934. Stead, E. A., Jr., and Ebert, R. V.: Shock Syndrome Produced by Failure of the Heart, ibid. **69**: 369 (March) 1942.

7a. Blumgart, H. L.; Schlesinger, M. J., and Zoll, P. M.: Multiple Fresh Coronary Occlusions in Patients with Antecedent Shock, Arch. Int. Med. **68**: 181 (Aug.) 1941.

7b. Stewart, H. J.: Cardiac Therapy, New York, Paul B. Hoeber, Inc., 1952, p. 112.

8. Gootnick, A., and Knox, F. H., Jr.: Management of Shock in Acute Myocardial Infarction, Circulation **7**: 511, 1953.

in critical situations. Epinephrine is hazardous and is contraindicated. The most potent agent of the group is arterenol, which may be effective when other preparations have failed. It cannot be given subcutaneously or intramuscularly. Extravascular administration produces severe necrosis and sloughing because of its marked vasoconstrictor property. It produces a generalized arterial, capillary, and venous vasoconstriction, with an increase in total peripheral resistance and a resultant increase in systolic, diastolic, and mean systemic and pulmonary arterial blood pressures. It does not increase the cardiac rate. Anxiety, restlessness, and apprehension, produced by epinephrine, do not occur with arterenol. Striking rises in oxygen tension in areas of myocardial ischemia have been demonstrated after its administration.[9]

Arterenol is best used by slow intravenous drip, each cubic centimeter containing 4 to 12 mcg. It is supplied in 4 mg. ampuls, one to three of which are diluted in 1,000 cc. of 5% dextrose or isotonic sodium chloride to yield a solution for intravenous administration containing 4 to 12 mcg. per cubic centimeter. The flow of arterenol is maintained at a rate sufficient to elevate the systolic blood pressure to approximately 100 mm. Hg or to alleviate the clinical manifestations of shock. Twenty to thirty drops per minute of the 4 mcg. per cubic centimeter solution are usually necessary. After the blood pressure has been stabilized for several hours, dosage may be gradually reduced. Abrupt cessation may result in sudden drop in blood pressure. It is frequently advisable to follow arterenol with intravenous infusion of 5% dextrose in water for an additional 12 to 24 hours in order to facilitate emergency therapy if needed. Occasionally when there is no satisfactory response to arterenol and the veins are collapsed, intravenous transfusion of 250 cc. or more of plasma may enhance the effectiveness of the drug. In some patients, continuous administration of arterenol may be necessary for as long as six or more days before it becomes evident, on reduction of the dosage, that the patient can maintain his blood pressure without this therapy.

Certain precautions are of the utmost importance. Extravascular infiltration of arterenol may result in intense vasospasm, with subsequent necrosis and ulceration of the skin. This is particularly likely to occur if the veins of the hand or foot are used. Intravenous infusions in the leg are to be administered with caution in the presence of peripheral vascular disease or diabetes mellitus. Local venospasm, pallor, cold skin, and cyanosis in the area of insertion of the needle within 1 to 24 hours of the start of infusion have been noted. Subsequently a red, streaky phlebitis surrounds the area. Vesicular eruptions or superficial ulcerations may occur in some of these patients, but complete healing generally occurs. The application of warm packs at and above the level of the needle during infusions has decreased the incidence and severity of cutaneous reactions and should be generally employed.

In patients with congestive failure or pulmonary edema, the possibility of their aggravation by arterenol must be considered. The increase in arterial, capillary, and venous pressures in the pulmonary circuit following the administration of arterenol in normotensive persons supports this possibility. The evidence to date, however, indicates that arterenol in such patients does not aggravate pulmonary edema or congestive failure, and in some of these patients immediate improvement was observed. The pressor effect of arterenol has been potentiated experimentally by desoxycorticosterone acetate, tetraethylammonium bromide, corticotropin, and cortisone. The available clinical data are at present insufficient to permit any conclusions concerning the clinical effectiveness of these agents in conjunction with arterenol in the treatment of shock.[10]

Clinical experience indicates that by the use of arterenol or other pressor amines the mortality in acute myocardial infarction may be decreased to a significant though limited extent. It is to be remembered that treatment with these agents is directed at only one consequence of the underlying pathological condition, that shock generally occurs in those most gravely ill, and that the mortality rate in such patients is inevitably high. To summarize, the earlier shock is treated, the greater the likelihood of success. When, after repeated intramuscular injections of phenylephrine, or similar vasopressor agents, the blood pressure fails to be sustained by the patient or if the shock is severe, arterenol is the drug of choice. It is to be employed in accordance with the precautions outlined above. The concomitant intravenous use of saline solutions, plasma, or blood may be necessary.

Shock and acute pulmonary edema not infrequently occur simultaneously and present an almost insoluble therapeutic problem that generally ends fatally. In all patients with shock due to acute myocardial infarction, peripheral vasomotor collapse with defective venous return and diminished cardiac output play important roles. In the patients with left ventricular failure, the pulmonary edema reflects predominant weakness of the left ventricle relative to the right ventricle. Cardiopulmonic reflexes may also be important. Rapid digitalization as well as the other measures previously described should be employed to combat shock. In occasional patients showing both shock and left ventricular failure, the veins may be full and engorged. Under such circumstances temporary trapping of blood in the extremities to reduce venous return by the application of tourniquets or even venesection must be considered. It is difficult to evaluate the effectiveness of these procedures, since these patients represent the most precarious and gravely ill group. Oxygen therapy with alcohol vapor inhalation is useful.

Cardiac arrhythmias frequently occur in acute myocardial infarction and may to an important degree be responsible for shock or left ventricular failure with pulmonary edema. The discovery by Zoll [11] that the heart in the complete standstill of Stokes-Adams syndrome may be resuscitated by the application of external electrical stimuli to the chest wall raises the hope that cardiac arrest in some cases of acute myocardial infarction may be treated successfully by this method.

9. Sayen, J. J.: Favorable Effects of L-Nor-Epinephrine on Experimental Localized Ischemia of Myocardium, Proceedings of the 44th Meeting of the American Society for Clinical Investigation, May 5, 1952.

10. Kurland, G. S., and Malach, M.: The Clinical Use of Nor-Epinephrine in the Treatment of Shock Accompanying Myocardial Infarction and Other Conditions, New England J. Med. **247**: 383, 1952.

11. Zoll, P. M.: Resuscitation of the Heart in Ventricular Standstill by External Electric Stimulation, New England J. Med. **247**: 768, 1952.

SUMMARY AND CONCLUSIONS

The clinical management of acute myocardial infarction is summarized. The importance of rest, the control of pain, the use of oxygen, aminophylline, digitalis, quinidine sulfate, procaine amide hydrochloride, glyceryl trinitrate (nitroglycerin), and anticoagulant therapy are discussed. The treatment of associated shock is also outlined. Moderate to severe shock with systolic blood pressure below 80 mm. Hg may become irreversible or refractory to all methods of treatment within an hour. The need for early and energetic treatment with vasopressor drugs, plasma, or whole blood is thus indicated. The use of various vasopressor agents, particularly arterenol, is discussed in detail. Intravenously administered saline solutions, plasma, or blood may be valuable adjuncts. Clinical experience has demonstrated that arterenol or other pressor amines reduce the mortality of acute myocardial infarction to a significant though limited extent.

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CLINICAL TRIAD OF MASSIVE SPLENIC INFARCTION, SICKLEMIA TRAIT, AND HIGH ALTITUDE FLYING

Capt. Jack C. Cooley, Capt. Wesley L. Peterson, Lieut. Charles E. Engel
and
Lieut. Col. James P. Jernigan, (MC), U. S. Air Force

In 1950, Sullivan reported one case of sicklemia trait with sudden splenic enlargement following an airplane flight.[1] This case report was reviewed by Margolies [2] in 1951 in his comprehensive review of the literature on sickle cell anemia. He states that it was difficult to believe that the splenic enlargement in this sicklemic patient was secondary to low oxygen tension in high altitude flying. He felt that this single case was inadequate proof of any specific relationship between sicklemia and high altitude flying.

The purpose of this report is to add to the literature six additional cases of splenic enlargement and infarction in high altitude flight. In five of these cases there was definite sickling in peripheral blood on cysteine preparation,[3] while in one case sickling could be demonstrated only in the pathological specimen.

In the six cases reported there was a remarkably similar clinical pattern. All the patients were examined shortly after high altitude flying in unpressurized aircraft at an altitude of between 10,000 and 15,000 ft. The duration of the flight at this altitude was in no case under one hour. All six patients were Negroes, and their ages ranged from 18 to 23 years. The pattern of symptomatology in each case was remarkably similar, as was the clinical course prior to splenectomy in five of the six cases. All patients felt well on boarding the aircraft. Within one-half to four hours after take-off, all became nauseated. The nausea was followed by frequent emesis and the occurrence of a dull ache to sharp pains in the left upper quadrant of the abdomen. In each case the pain became progressively worse, and in five of the six cases a special landing was made because of the severity of the patients' illness.

On admission to the hospital, the temperature of all patients ranged from 98 to 99.6 F. Physical examination revealed all patients to be subacutely ill. They all had moderate to marked tenderness in the left upper quadrant of the abdomen, with varying amounts of abdominal muscular spasm and rebound tenderness. All demonstrated paralytic ileus as manifested by diminished to absent bowel sounds. Two patients had anterior tibial scars.

The temperature curves of all patients rose to 101 to 104 F within 48 hours. One patient (case 1) became markedly febrile at 72 hours. The febrile response in all cases was associated with anorexia, sweating, moderate abdominal distention, and increasing abdominal pain, primarily in the left upper quadrant. In two of the patients, examination of the chest revealed diminished breath sounds and increased dullness to percussion in the lower posterior and lateral areas of the left side of the chest. Chest roentgenograms in these two cases revealed pleural effusions on the left side.

Roentgenograms of the abdomen taken in the upright, recumbent, and lateral positions revealed one or more of the following significant findings: (1) localized dilatation of small bowel in left upper quadrant; (2) splenic enlargement; (3) elevation of the left diaphragm; (4) a serrated margin of the greater curvature of the stomach; (5) anterior medial displacement of the stomach and colon; (6) pleural effusion on the left; and (7) absence of the properitoneal line on the left.

Laboratory examinations revealed definite sickling of erythrocytes on cysteine preparation in five patients. The remainder of the laboratory tests demonstrated no unusual or diagnostic abnormality and will be described individually in the case summaries.

Splenectomy was performed in each case. Three types of incisions were used: left rectus (three cases), left subcostal (two cases), and left rectus with thoracic extension (one case). General anesthesia was used to prevent hypoxia. Routine splenic pedicle ligation was carried out in each case. Supportive measures, including parenteral administration of fluids and whole blood, were used as indicated.

A gross and microscopic pathological examination was carried out on each spleen and revealed both gross and microscopic evidence of massive infarction without evi-

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Capt. C. R. Robison made the pathological interpretations.
1. Sullivan, B. H., Jr.: Danger of Airplane Flight to Persons with Sicklemia, Ann. Int. Med. **32**: 338-342 (Feb.) 1950.
2. Margolies, M. P.: Sickle Cell Anemia: A Composite Study and Survey, Medicine **30**: 343-357 (Dec.) 1951.
3. Thomas, L., and Stetson, C. A., Jr.: Sulfhydryl Compounds and the Sickling Phenomenon, Bull. Johns Hopkins Hosp. **83**: 176-180 (Aug.) 1948.

dence of major splenic arterial thrombosis. Following are the summaries of the individual case reports.

REPORT OF CASES

CASE 1.—A 22-year-old Negro was admitted to the Francis E. Warren Air Force Hospital on July 25, 1952. The patient had left Korea one month previously and traveled by ship to the West Coast. He then boarded a military aircraft enroute to the East Coast. Several hours after the onset of the flight, the patient noted an onset of dull aching pain in the left side. This was not severe to begin with. After a short time, however, the patient began vomiting and the pain gradually increased. The pain was increased by respiration and increased by motion. There was no history of leg ulcers or unusual diseases while he was in Korea. There was no significant family history.

Examination revealed a subacutely ill Negro with a temperature of 99 F and a blood pressure of 134/80 mm. Hg. Positive findings were that of moderate tenderness and muscle guarding in the left upper quadrant of the abdomen, left flank, and left costovertebral angle. Peristalsis was hypoactive. There was slight tenderness also over the left lateral lower rib cage. Laboratory studies revealed a white blood cell count of 15,300, with 86% neutrophils and 13% lymphocytes and 1% monocytes. The red blood cell count was 4,500,000, with 11.9 gm. per 100 cc. of hemoglobin.

During the next few days the patient's pain gradually increased in severity and the temperature began to rise. The white blood cell count rose to 33,000, with 85% neutrophils and 15% lymphocytes. Roentgenograms of the chest revealed a pleural effusion at the left costophrenic angle. A scout film of the abdomen revealed ileus of the bowel. An initial diagnosis was made of pleural effusion and probable pneumonia of the lower lobe of the left lung. The temperature reached a maximum of 104 F. The patient was treated with chlortetracycline (aureomycin). Multiple thoracenteses were performed in the ninth interspace in the posterior axillary line, and grossly bloody fluid was obtained. Culture of the fluid was negative. However, on Aug. 7 and 8, the thoracenteses were performed in a slightly higher level of the left side of the chest, and straw-colored fluid was obtained. It was then concluded that in the previous thoracenteses the body had actually been entered below the diaphragm. Malarial smears and the usual blood tests for sickling were negative.

On Aug. 19 an exploratory laparotomy was performed. Exploration revealed a soft, mushy, completely infarcted spleen. A splenectomy was performed, and the subdiaphragmatic space was drained. Postoperatively, a subdiaphragmatic abscess developed, which was drained posteriorly with removal of the left 12th rib on Sept. 5. Postoperatively, there were three positive cysteine tests for sickling of the red blood cells. The patient was discharged from the hospital on Dec. 10.

Pathological examination of the spleen revealed a massive infarction of the upper pole of the spleen, with some liquefactive necrosis and coagulation necrosis. The spleen weighed 144 gm. The red blood cells in the splenic sinuses showed some elongation and occasional lancet configuration that were suggestive of sickle cells.

CASE 2.—An 18-year-old Negro youth was admitted to the Francis E. Warren Air Force Hospital in October, 1950. He gave a history of having flown from Lackland Air Force Base, Texas, to Francis E. Warren Air Force Base, Wyoming. He had not flown in any large aircraft previously. Approximately two hours after the onset of the flight, midabdominal pain and vomiting developed. There was no significant past history or family history.

Results of examination were essentially negative, except for the finding of some abdominal tenderness in the midsection and left upper quadrant. For three days the vomiting and pain continued, after which the symptoms and findings subsided except for a continuing slight to moderate aching pain in the left upper quadrant of the abdomen. The temperature rose slightly. The exact course and the laboratory findings are unknown because of the loss of a portion of the patient's record. It is known, however, that no red blood cell fragility or sickle cell blood tests were performed. X-ray studies revealed a density in the left upper quadrant of the abdomen.

Approximately three weeks following admission to the hospital, surgical exploration was done, during which a large, grossly infarcted spleen was found. A splenectomy was performed. In December, 1952, the patient was seen by us and examination revealed no abnormality except for a well-healed scar in the left upper abdominal quadrant. The patient was asymptomatic. Cysteine blood tests for the sickle cell trait were positive.

CASE 3.—A 23-year-old Negro was admitted to the Francis E. Warren Air Force Hospital on April 4, 1953. The patient had previously been stationed in Korea and was enroute in an airplane from the West Coast to the East. Within one-half hour after the onset of the flight, severe pain developed in the left upper abdominal quadrant. Nausea and vomiting were present. There was no significant family history. The patient gave a history of having had recurring ulcerations of the skin involving the lower third of both legs. Supernumerary digits were present on the hands.

Examination revealed an acutely ill Negro with a temperature of 99.6 F and blood pressure of 108/70 mm. Hg. There was marked abdominal tenderness and guarding in the left upper quadrant, with a palpable mass in the left upper quadrant of the abdomen extending to 4 cm. below the left costal margin. Laboratory studies revealed a red blood cell count of 2,740,000, with 8 gm. per 100 cc. of hemoglobin. The white blood cell count was 11,000, with 89% neutrophils. The corrected sedimentation rate was 0 mm. per hour. Sickling of red blood cells was noted in the counting chamber when the first total red blood cell count was done. A cysteine test for sickling was positive. The results of red blood cell fragility tests were normal. Malarial smears were negative. A flat plate of the abdomen revealed the spleen to be enlarged to approximately three times normal size and to extend well below the left costal margin. The patient's condition gradually became worse, and the temperature gradually increased, reaching a peak of 102.6 F.

On the day after admission abdominal exploration revealed a grossly infarcted spleen approximately four times normal size. A splenectomy was performed. Pathological examination of the spleen showed that there was a recent massive infarction and generalized acute passive congestion. The spleen weighed 804 gm. Many sickle cells were found in the pathological specimen.

CASE 4.—A 21-year-old Negro was admitted to the hospital at Francis E. Warren Air Force Base on April 22, 1953. He had previously been stationed in Korea and had returned to the West Coast by ship. He then boarded an aircraft that was enroute to the East Coast. One-half hour following the onset of flight, severe sharp pain developed in the left upper abdomen, with radiation primarily to the left flank and left costovertebral angle region. The patient vomited several times. There was no significant family history. He had had leg ulcers in childhood, and there was a history of addiction to heroin while he was in Korea.

Examination revealed a subacutely ill Negro with a temperature of 98.6 F. and blood pressure of 160/115 mm. Hg. Positive physical findings included a faint short systolic cardiac murmur at the left sternal border in the third intercostal space, and abdominal examination showed muscle guarding and tenderness in the left upper quadrant of the abdomen. Peristalsis was diminished, and there were no palpable masses or organs. Laboratory studies revealed a positive cysteine sickle cell test, 4,900,000 red blood cells, 16.4 gm. of hemoglobin per 100 cc. and 8,500 white blood cells, with 75% neutrophils. A scout roentgenogram of the abdomen revealed no abnormalities. During the next three days, the patient's clinical condition was essentially unchanged except for a gradually increasing temperature that rose to a maximum of 101.6 F. In the red blood cell fragility test the control began hemolysis with 0.46% saline solution, with the patient's blood beginning hemolysis with 0.40% saline solution. Healed pretibial scars were noted.

On April 25 the patient's symptoms increased in severity. Abdominal exploration revealed no abnormalities except a spleen enlarged approximately three times normal size and

grossly completely infarcted. A splenectomy was performed. Pathological examination of the spleen showed it to be infarcted and congested; it weighed 325 gm.

CASE 5.—A 23-year-old Negro was admitted to the hospital at Francis E. Warren Air Force Base on May 13, 1953. The patient had been enroute from Korea to the East Coast and had boarded an airplane in California that was eastward bound. Approximately one hour after the onset of the flight, there was a sudden onset of severe pain in the left upper quadrant of the abdomen, with associated vomiting. There was no radiation of the pain. There was no significant past history or family history.

Examination revealed a subacutely ill Negro with a temperature of 99 F and blood pressure of 140/90 mm. Hg. Positive physical findings were localized to the abdomen, where there was moderate tenderness in the left upper quadrant. There was mild generalized lower abdominal tenderness with rebound referred to the left upper quadrant. There was a palpable mass in the left flank. The extremities were normal. Laboratory studies revealed a white blood cell count of 18,800, with 95% neutrophils. The red blood cell count was 4,600,000, with a hemoglobin level of 14 gm. per 100 cc. A blood test for sickling was negative. In the red blood cell fragility test hemolysis of the control started with 0.42% saline solution, and the patient's blood began hemolysis with 0.40% saline solution. A Coombs' test and malarial smears were negative. The patient's condition gradually became worse, his temperature gradually increasing to a maximum of 101 F.

On the day after admission, abdominal exploration revealed a large grossly infarcted spleen. A splenectomy was performed. Postoperative blood tests were positive on two occasions for sickling. Pathological examination of the spleen revealed a massive splenic infarct. The spleen weighed 460 gm.

CASE 6.—A 21-year-old Negro was admitted to the hospital at Francis E. Warren Air Force Base on May 20, 1953. He was enroute from Camp Stoneman, California, to the East by aircraft after having been previously stationed in Korea and recently transferred from Korea to the West Coast by ship. Approximately four hours after the onset of the flight, the patient was awakened from sleep with severe aching pain in the left upper abdomen. He vomited once. There was no radiation of the pain, but it was increased with respiration and movement. There was no significant past history or family history.

Examination revealed an acutely ill Negro lying on his right side. The temperature was 98.6 F and the blood pressure 130/80 mm. Hg. The positive findings were localized to the abdomen. There was moderate tenderness, with guarding in the upper abdomen being most marked in the left upper quadrant and left costovertebral angle region. There was a palpable spleen and abdominal bowel sounds were hypoactive. X-ray study of the abdomen revealed a segmental ileus in the left upper quadrant, with slight displacement of the stomach. Laboratory studies showed a white blood cell count of 24,300, with 90% neutrophils; there were 2,160,000 red blood cells with 11.9 gm. of hemoglobin per 100 cc. The red blood cell fragility test, malarial smears, sickle cell test, and agglutinations for infectious mononucleosis were negative. In the next 30 hours the patient's pain gradually increased, and the temperature rose to a maximum of 100.6 F. Repeat roentgenograms revealed an increase in the ileus in the left upper quadrant of the abdomen. A chest roentgenogram revealed a minimal pleural effusion at the left costophrenic angle.

On May 21 surgical exploration revealed a grossly and completely infarcted spleen approximately two to three times normal size. A splenectomy was performed. Pathological examination of the spleen showed an infarcted congested spleen in which groups of sickle cells were seen. The spleen weighed 260 gm.

COMMENT

We feel that these cases demonstrate a definite clinical picture in which the best treatment is early splenectomy. Case 1 demonstrates the potential complications that may attend conservative management. These complications included (1) a protracted toxic course, (2) massive left pleural effusion, and (3) left subphrenic abscess. As a result of the last complication, further surgical procedures were necessary. Although in Sullivan's [1] single case conservative measures were successful, we feel that the gravity of the complications in our first case and the pathological demonstration of massive splenic infarction in all are just indications for early splenectomy.

We feel, also, that the previous comments by Sullivan [1] and Findlay and associates [4] should be reemphasized, since our six cases support their views that a possible hazard exists for the Negro with the sickle cell trait in airplane flight. Although we were unable to demonstrate the sickling trait in one of our patients, we feel that this was probably the underlying factor in all cases and was related to high altitude flying with subsequent low oxygen tension.

We have no definite proof that a direct cause and effect relationship exists between high altitude flying, sicklemia trait, and splenic infarction; however, the triad is certainly suggested and cannot be overlooked. The military implications are obviously important and warrant further investigation.

SUMMARY

Six cases of massive splenic infarction in Negro males following high altitude flying are described. In five cases sickling was demonstrated on laboratory preparation. Splenectomy is the treatment of choice and was carried out in all six cases. The triad of sicklemia trait, high altitude flying, and splenic infarction is discussed. Possible military implications are mentioned.

3450th Medical Group, Francis E. Warren Air Force Base, Wyoming (Captain Peterson).

4. Findlay, G. M.; Boulter, E. A., and MacGibbon, C. B.: A Note on Sickling and Flying, J. Roy. Army M. Corps. **89**: 138-141 (Sept.) 1947.

The Juvenile Diabetic.—The onset and nature of diabetes mellitus in the child differs from that seen in the adult. In the child the disease is acute and virulent. Very often the child is first seen in a diabetic coma. . . . The onset of acidosis and coma in the juvenile diabetic can be ascribed invariably to factors of infections and/or failure to increase the dose or total omission of the insulin. During the period of greatest sexual development a radical change in the character of the disease takes place, the disease becoming more severe. The insulin requirements mount rapidly and the nutritional needs increase at a rate sufficient to support the rapid growth. . . . It is believed that the increased activity of the various endocrine glands at this period of development tends to partially neutralize the effect of exogenous and endogenous insulin. Then too, the adolescent is making an emotional adjustment at this time, and emotional stress as well as physical exercise are major factors controlling the response to therapy. Insulin reactions are common, and their recognition may be more difficult than in the adult. Both the child and the mother should be thoroughly familiar with these reactions and the knowledge of how best to prevent them. Listlessness, negativism, peevishness, and circumoral pallor or signs and symptoms commonly found in the child. Headache, nausea and vomiting also may occur. The time relation of these reactions will depend upon the type of insulin used. In general, one of the rapidly acting insulins, regular or crystalline, is best used for children under five years of age, and protamine insulin, globin insulin or nonprotein nitrogen insulin with or without one of the rapidly acting insulins is used for children above this age.—G. J. Ney, M.D., The Juvenile Diabetic: A Survey of Recent Literature, *Archives of Pediatrics*, June, 1953.

TREATMENT OF HODGKIN'S DISEASE AND THE LYMPHOSARCOMAS

Ovid O. Meyer, M.D., Madison, Wis.

In this presentation the treatment of Hodgkin's disease, the lymphoid cell type of lymphosarcoma, follicular lymphoblastoma, and reticulum cell sarcoma alone will be discussed, although it is accepted that the therapy of leukemia, particularly lymphocytic leukemia, might also be included, since the same or similar measures are often successfully employed for this disorder as well. This report is based on the management of patients treated in a lymphoma-leukemia outpatient clinic and general hospital for the past 20 years. Its purpose is to clarify, if possible, the status of therapy today for these entities and perhaps to suggest the optimal form of treatment under a variety of circumstances. When operative procedures and radiation were considered the sole successful therapy, the problem was simple; however, with newer therapeutic measures available, there may well be confusion in selecting the best treatment for the individual patient.

It is well known that when Thomas Hodgkin [1] in 1832 described cases of generalized lymphadenopathy and splenomegaly, not more than three or four represented what is now accepted as a pathological and clinical entity. The reports of Samuel Wilks [2] in 1856 and 1865 clarified the subject, however; he excluded some of Hodgkin's cases and, with the description of additional cases, established the disease as distinctive and suggested the name by which it has since been accepted. Space will not permit a survey of the pertinent literature over the past hundred years, but it has not yet been established whether this is a neoplastic disease or one due to an unknown infection. There are two schools of thought and each has its proponents, since at least the well-known clinical aspects are suggestive of both; in some cases the condition is more strongly indicative of infection and in others simulates neoplastic disease and in still other cases is suggestive of both. However, most investigators are in accord with the concept of Piney [3] that this is a disease of the reticuloendothelial system.

Jackson and Parker,[4] among others, describe Hodgkin's disease under three headings, based on pathological and to some extent clinical grounds: (*a*) paragranuloma, which only slightly resembles a true tumor and is comparatively benign; (*b*) granuloma, the type usually refered to when Hodgkin's disease is spoken of, which has been given more than 50 names over the years [5] and presents histological and clinical aspects suggesting both an inflammation and a tumor; and (*c*) Hodgkin's sarcoma, which, in the opinion of Jackson and Parker,[4] has the characteristics of a true tumor, occurs usually after the patient is the age of 50, spreads quickly, and is more rapidly fatal than the other two. It is generally accepted that paragranuloma may at any time undergo transition to granuloma, and granuloma may terminate as Hodgkin's sarcoma. Furthermore, in certain cases different sites of the disease may present different lesions.

The classification of the types of Hodgkin's disease is significant from the standpoint of prognosis and therapy, and, since emphasis has been placed upon this in recent years by several workers in the field, it seems desirable to make note of it. Furthermore, it would seem justifiable, when analyzing a series of cases, to conclude that there are differences in prognosis for the three types. However, when dealing with the individual patient, we have not found this classification helpful, since there have been many exceptions to the rule; some patients with Hodgkin's sarcoma live many years with a modicum of therapy, and some with granuloma have a very short, fulminating course. Hoster [6] and Slaughter and Craver,[7] too, have been unable to correlate the clinical course, response to therapy, or duration of life with the histopathology of the diseased tissue.

With the cause of Hodgkin's disease still unknown, one is forced to further admit that there is no known cure, although in rare instances a patient may appear to be cured for many years and, still more seldom, may be cured. Nevertheless, therapeutic agents are available that now, to a greater extent than five years ago, are efficacious in controlling symptoms, in permitting a more comfortable and economically sound life, and, it is my belief, in prolonging life in many instances.

I would urge in this introduction that a totally pessimistic outlook is undesirable when dealing with the individual patient with Hodgkin's disease or the lymphosarcomas. Although the average duration of life may be only two or three years or slightly more, many patients live well beyond this period, carrying on an active, useful life. Everyone knows of patients who have lived 10, 15, and 20 years after the diagnosis was made, and one of our patients died last December of a cerebral accident after having had Hodgkin's disease with symptoms intermittently for 25 years, during which time she led a busy life and reared five children.

Many drugs (Hoster and Dratman [8] list over 50) have been used in the treatment of Hodgkin's disease. A solution of potassium arsenite (Fowler's solution) particularly has widely been used, and it is mentioned in the first edition of Osler's "Practice of Medicine" as having efficacy. Whereas it appears to have little value in the lymphoblastomas, it is occasionally very effective in chronic granulocytic leukemia, thus resembling a modern drug urethan (ethyl carbamate). Gomers and Broadbent, according to Osler, recommended the use of phosphorus, and Osler advocated its use if potassium arsenite solution was not well tolerated.

IRRADIATION

Roentgen irradiation was first employed in the treatment of Hodgkin's disease between 1902 and 1905 by Pusey, Coley, Williams, Childs, Steinwand, Heineke, and others,[9] and it is still unsurpassed for treatment in most

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The nitrogen mustard and triethylene melamine were supplied by J. M. Ruegsegger, M.D., Lederle Laboratories, Pearl River, N. Y.

Because of space limitations, the bibliographic references have been omitted from THE JOURNAL but will be included in the author's reprints.

cases of Hodgkin's disease, lymphosarcoma, reticulum cell sarcoma, and follicular lymphoblastoma. Follicular lymphoblastoma is the most sensitive of tumors to roentgen therapy. There are many techniques and recommendations of dosages, each with its advocates for the various methods of administration, but these will not be discussed since there are many sources for this information, including Pohle,[10] O'Brien,[11] Gilbert,[12] and Merner and Stenstrom.[13]

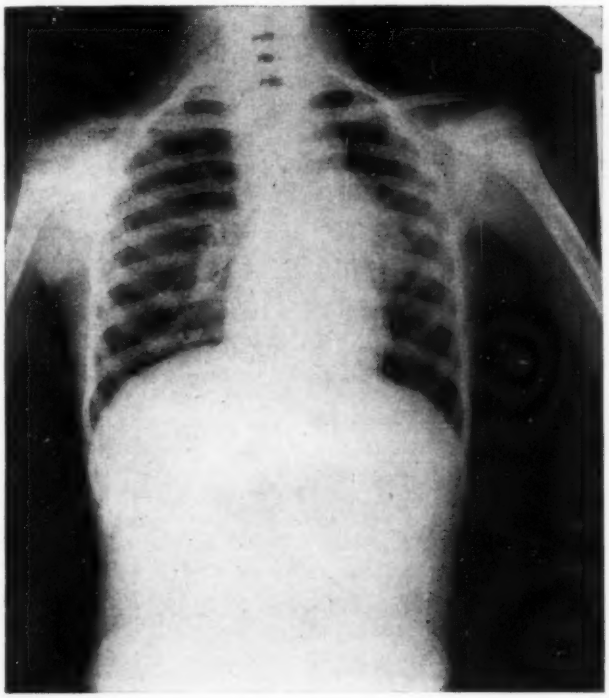

Fig. 1.—Roentgenogram of the chest made on June 7, 1937. A mediastinal mass is visible on the left side.

High voltage therapy is usually employed and is directed to all detectable sites of disease. At the University of Wisconsin we ordinarily use heavily filtered radiation of short wave length (160 to 200 kv., 0.5 mm. Cu plus 1 mm. Al; the half-value layer of Cu equals 0.75 to 1 mm.) in order to avoid undesirable skin reactions and yet permit a sufficient dose to the underlying diseased tissue. In the first series of treatments we usually administer 150 to 200 r (in air) per field and do not expose more than two fields per day up to a total of 1,600 to 2,000 r per field. Treatment may be given daily or every second or third day, depending on the reaction of the patient to the therapy. To minimize x-ray sickness, which is not uncommon, we now usually administer a suppository containing 65 mg. of pentobarbital sodium before the treatment and/or 50 to 100 mg. of dimenhydrinate (Dramamine) orally before and, if necessary, after therapy.

Roentgen irradiation has depressing effects upon the bone marrow, and the usual earliest sign of this is leukopenia. Hence, while the patient is undergoing therapy, especially if the doses are large, frequent leukocyte counts are made to avoid extreme leukopenia. There is no arbitrary level of leukocytes to indicate that treatment should be discontinued, however, as there must be individualization of therapy and an occasional patient may have leukopenia before therapy is started. It is our usual but not invariable policy to give one or more transfusions prior to roentgen therapy if the hemoglobin level is 50% of normal or less and the erythrocyte count 2,500,000 or less.

Bone lesions, which are no rarity, usually necessitate intensive therapy, and for these the results are often favorable. Only rarely do we use general body exposure. Therapy is given as needed to effect the relief of symptoms and induce clinical remission. The occasional remarkable course of a patient who has been treated by roentgen therapy is exemplified in the following case:

REPORT OF A CASE

A 7-year-old boy was first seen at the University Hospitals June 7, 1937, with the complaint of tiredness. Since he had had scarlet fever, three years before, lymph nodes in the neck had been enlarged. For three or four weeks before admission the nodes had increased in size, and greater tiredness, weakness, and pallor had developed.

Examination showed pallor in a thin, listless boy weighing 49 lb. (22.2 kg.). There were several enlarged cervical, axillary, and inguinal nodes, the largest in the neck being 3 cm. in diameter, with parasternal dulness to the left. The spleen could be felt 6 cm. below the costal margin, and the liver edge was just palpable.

The hemoglobin level was 11 gm. per 100 cc. (71%) (Haden-Hauser), and there were 3,900,000 erythrocytes. There were 7,900 leukocytes, with 69.8% neutrophils, 14.2% monocytes, and 0.4% eosinophils. The platelets were moderately increased in number in the smear. The chest roentgenograms showed a mediastinal mass (fig. 1). After a biopsy of the largest cervical node, the patient's condition was diagnosed as Hodgkin's disease by Dr. William Bayley. Dr. Walter Jaeschke reviewed the slides two years ago (fig. 2) and again interpreted the malady as Hodgkin's disease.

In June, 1937, the patient received a total of eight roentgen ray treatments of 150 r each over the anterior and posterior mediastinum, the spleen, and the right cervical regions. In March, 1938, he received three treatments of 150 r to the right and left cervical regions and three treatments to the right and left inguinal regions. In July, 1939, over a period of four days, he received four treatments of 150 r to the cervical, axillary, and inguinal regions bilaterally. The response in the mediastinal lymph nodes is shown in figure 3. He has had no

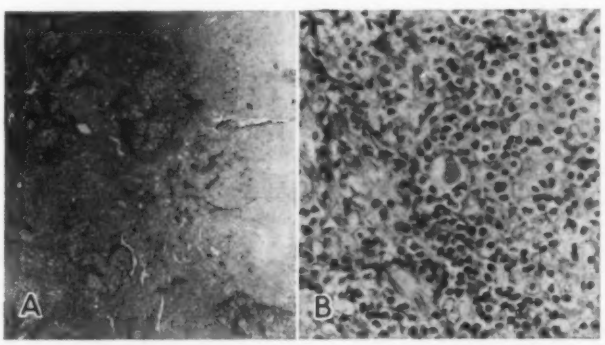

Fig. 2.—Microscopic views of sections of the excised lymph node under low power magnification (*A*) (× 25) and under high power magnification (*B*) (× 100).

therapy since this date, and he has been without symptoms or abnormal signs. He was well and happy just before he graduated from the the University of Wisconsin in June, 1952, at the age of 22. He was still well as of June, 1953, and was employed in a newspaper office.

The diagnosis in this case seems to be unquestionable. Furthermore, the disease was widespread in superficial lymph nodes, mediastinum, and spleen and productive of

systemic symptoms. There are some who believe that either mediastinal or splenic, and especially splenic, involvement implies a poor prognosis, but that is not necessarily true. Hoster [7] believed—and this is generally accepted—that the prognosis is more unfavorable in children, but certainly there are exceptions. Peters [14] found that the early age group tended to respond better to roentgen therapy than the later age-groups.

RADIUM

Radium is now rarely used in the treatment of lymphomatous disease, for it has certain disadvantages, such as greater likelihood of skin damage. It is also more difficult to use in treating any but sharply circumscribed lesions. With localized lesions it can be used effectively, however, but even then has no significant advantage over roentgen irradiation. The effects of radium and roentgen therapy upon the diseased tissue are, however, analogous.

RADIOACTIVE SUBSTANCES

Although colloidal manganese (half-life 310 days) has been used by Hahn and Sheppard,[15] radioactive phosphorus, or P^{32} (half-life 14.3 days), alone has had extensive trial in the treatment of Hodgkin's disease, the

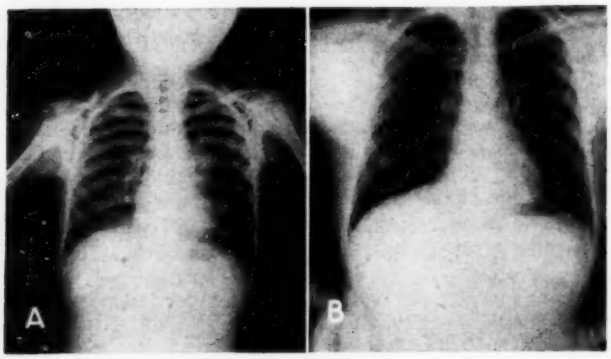

Fig. 3.—Roentgenograms of the chest made on Oct. 4, 1937 (*A*) and May 25, 1951 (*B*).

lymphosarcomas, leukemias, and polycythemia rubra vera. It is especially effective in polycythemia rubra vera and granulocytic leukemia and rather disappointing in the treatment of the others. The unsatisfactory results in the latter might be due to the lack of localization of the radioactive phosphorus to the reticuloendothelial tissues after oral or intravenous administration, whereas there is a high degree of affinity for the myeloid tissues.

Hoster, Doan, and Schumacher [16] found radioactive phosphorus to be of no therapeutic value in the treatment in 11 selected cases of Hodgkin's disease. As it is our belief that other available forms of therapy are better than P^{32} in the diseases under discussion, we do not use it. Should one choose to employ it, as in other types of therapy, individualization of dosage is required.

NITROGEN MUSTARD

The nitrogen mustards, tris (beta-chloroethyl) amine hydrochloride and methyl-bis (beta-chloroethyl) amine hydrochloride, were first given to human beings with terminal neoplastic disease in 1942 by Gilman and his associates. The chemistry and pharmacology were reviewed by Gilman and Philips [17] in 1946. Subsequently, several reports [18] among others concerning the effectiveness of nitrogen mustards in Hodgkin's disease, the lymphosarcomas, leukemias, and other malignant diseases have been published. Gradually, employment of the bis compound alone has become standard, and this has been marketed the past few years under the trade name of Mustargen (Merck). The code designation is HN_2.

The nitrogen mustards are leukotoxic, but this it not owing to the nitrogen mustards themselves but to the first ionization product, the ethylenimonium derivatives. The effects depend on inhibition of enzyme systems within the cell and mitoses, but other effects, too, are important.

Nitrogen mustard is a white powder that rapidly loses its potency in solution; hence, when water is added, the material should be injected and not allowed to stand. As concentrated solutions are very damaging to veins, producing pain with thrombophlebitis, it is customary to inject the solution (1 mg. per cubic centimeter) through the tubing of a solution of dextrose or saline solution (usually 250 cc.) that is being administered intravenously. The dose is 0.1 mg. per kilogram of body weight, and a course totals 0.4 to 0.6 mg. per kilogram, which is usually given over a period of 4 to 12 days. Since nausea and vomiting follow the administration of the drug in many of the patients, it is our custom to administer the dose at bedtime after giving the patient a sedative, usually a barbiturate, to minimize the period of discomfort.

We have found that nitrogen mustard is a valuable drug, particularly in Hodgkin's disease, but is less valuable in the lymphosarcomas and leukemias. It is capable of producing subjective and objective benefits akin to those obtained with radiation therapy. It is most useful when there is widespread systemic disease or severe systemic intoxication in which radiation therapy might be hazardous or when the patient is no longer responsive to radiation therapy. There is some evidence that responsiveness to roentgen therapy may be occasionally restored following nitrogen mustard therapy.[18a]

The remissions induced are, in our experience, usually of shorter duration, 6 weeks to 13 weeks, than those following roentgen therapy. The remissions may, however, be for as long as a year. The effect is likely to be seen promptly, within a week, and is maximal in three to four weeks. The margin of safety in the use of nitrogen mustard is narrow, and serious toxic effects upon the blood-forming organs are to be guarded against. Leukopenia, granulocytopenia, thrombocytopenia, and anemia are all serious potentialities. The maximum depressant effect of the drug is usually between the 10th and 20th day, and a second course of therapy should be avoided during this period. However, it has been a common practice to repeat a course when indicated after six weeks. The remissions in repeated courses are often shorter than those initially achieved, and ultimately there is no response; there is a lack of any appreciable response oftener than occurs with roentgen therapy, but this can probably be explained by the fact that most of our treated patients have been in late stages and have had previous extensive radiation. Weisberger and Heinle [19] have found that when L-cysteine is previously administered, it exerts a protective action against the leukopenia induced by nitrogen mustard.

The occasional employment of nitrogen mustard in an apparently desperate situation with good temporary results is exemplified in the following case:

A 14-year-old white boy was first seen at the University Hospitals May 11, 1950. In December, 1949, and again in March, 1950, he had a stabbing pain in the left supraclavicular region and anterior chest. Roentgenograms demonstrated mediastinal adenopathy. He was large and obese, weighing 182 lb. (82.6 kg.), and appeared to be in excellent health. There were two enlarged, firm, nontender lymph nodes in the cervical regions. There were no other palpable nodes, and the spleen was not palpable.

The hemoglobin level and erythrocyte count were normal, with 9,300 leukocytes and 73% neutrophils. Roentgenographic examination of the chest showed an upper anterior mediastinal tumor extending 5 cm. to the right and left of the midline. By biopsy of a lymph node, lymphosarcoma was diagnosed by Dr. Walter H. Jaeschke. Ten radiation treatments of 200 r were administered to the anterior and posterior mediastinum, and the patient was discharged.

After leading a normal life, going to school, and being active without complaints, he became chilled about Oct. 10 at a football game. Subsequently, he had cough, easy fatigability, dyspnea, anorexia, and, for a week, emesis almost every time he ate. Pallor had been noted for a week, and for this period he had been almost anuric. He had had hematemesis, black stools, and hematuria. There had been some severe right flank pain for a few days.

He was still well nourished but extremely pallid and seemingly very ill when admitted to the hospital on Nov. 8, 1950. His temperature reached 102 F rectally. There was a flame-shaped hemorrhage in the right fundus. The blood pressure was 140/80 mm. Hg, and there were hard, fixed nodes in the cervical region. A few rales could be heard in both lungs posteriorly. There was rigidity of the abdomen, marked bilateral flank tenderness, and no bladder distention. The tongue was dry, and the breath uriniferous. Catheterization produced 1 cc. of bloody urine. Indwelling ureteral catheters were inserted by the urological consultant the night of admission.

There was a hemoglobin level of 5 gm. (Leitz-photoelectric colorimeter), 1,520,000 erythrocytes, and 58,000 leukocytes, with 88.5% lymphocytes. The urine contained 6 red blood cells per high power field. The nonprotein nitrogen level was 185 mg. per 100 cc., the creatinine level 13.5 mg. per 100 cc., and the carbon dioxide level 34 vol. %. The serum sodium content was 143 mEq. and the potassium content 6.9 mEq. per liter.

The patient was given 500 cc. of blood by transfusion on the night of admission, 1,000 cc. on Nov. 10, 1,000 cc. on Nov. 14, and 500 cc. on Nov. 28 and 29 and Dec. 1. Faced with a desperate situation, we decided to give him nitrogen mustard. On Nov. 11 the patient was given 7.7 mg. of nitrogen mustard intravenously, a second dose on Nov. 13, a third on Nov. 16, and a fourth on Nov. 18. Fluids and electrolytes were administered in an attempt to maintain balance without overloading. The nonprotein nitrogen level rose to 300 mg. on Nov. 15 and then began to decline. On Nov. 11 diuresis began, with an output of 5,435 cc., and the output remained at high levels, over 2,500 cc., for several days thereafter. On Nov. 19 the nonprotein nitrogen was 189 mg.; then it rapidly decreased day by day, so that by Nov. 27 it was 37 mg. and on Nov. 30 it was 32 mg. The patient was allowed up and about in a wheel chair; he was almost afebrile, and went home on Dec. 1.

He returned to the hospital on Jan. 8, 1951. He had been quite well at home and had been following a normal daily routine and attending school. He had received three additional transfusions at home.

He was of good color and his blood pressure was 130/84 mm. Hg. There was neither superficial lymph node nor splenic enlargement. The hemoglobin level was 14 gm. and there were 4,600,000 erythrocytes. The leukocyte count was 9,200, with 79.2% neutrophils. The nonprotein nitrogen level was 34 mg. A chest roentgenogram showed no mediastinal mass, and the lungs were clear. He was discharged Jan. 10, returned in March, and was still quite well. He was observed in the outpatient department and in the hospital until his death Aug. 26, 1951, at home. His last admission was June 25, 1951, when he was very ill. He exhibited retinal hemorrhages, choked optic disks, and multiple ecchymoses on the arms, legs, and abdomen. The hemoglobin level then was 4.65 gm. The erythrocyte count was 1,100,000 and the leukocyte count 84,000, with 90% lymphocytes. The nonprotein nitrogen level was 189 mg. and the creatinine level 4.4 mg. per 100 cc.

As he had had nitrogen mustard therapy in March and roentgen therapy in April without apparent benefit, triethylene melamine was given, and, although the leukocyte count fell to 1,750, there was no marked improvement in his condition.

It appeared to us that in this case nitrogen mustard was strikingly effective in playing some role in producing a very satisfactory remission in a desperately ill patient. The situation was so acute that it would seem, in this instance, that the intravenous administration of nitrogen mustard was the treatment of choice.

NITROGEN MUSTARD AND IRRADIATION

Rose and his associates [20] have combined nitrogen mustard therapy with irradiation by giving a single large dose of 0.3 mg. per kilogram of body weight for the systemic effects followed by a single large dose of irradiation of up to 600 to 1200 r, ideally 800 r, to a single local site. The effect was better in Hodgkin's disease than in lymphosarcoma or reticulum cell sarcoma. The results did not clearly indicate that the combined therapy was better, but there was an advantage in that the period of hospitalization was shortened. It was observed that the combination can be given with reasonable safety without excessive bone marrow damage if leukopenia does not exist prior to treatment.

TRIETHYLENE MELAMINE

Triethylene melamine was found to have nitrogen mustard-like properties in animal experiments in 1949,[21] and shortly thereafter clinical studies [22] demonstrated the effectiveness of this drug in Hodgkin's disease, lymphosarcoma, and leukemia. The action of triethylene melamine, like that of nitrogen mustard, depends on transformation to an ethylenimonium compound, and the effect is similar.

This discovery has been, in our opinion, an important advance, for triethylene melamine can be given by mouth (although it may also be administered intravenously), less frequently produces nausea or vomiting, can be administered to outpatients with ease, and can be given to a patient persistently over periods of several months when the doses are properly spaced.

Various workers [23] have suggested a variety of doses, but all are in agreement that the drug is highly toxic for blood-forming tissues and must be administered with proper circumspection. Also, it has been established by Karnofsky and associates [22b] and others that the material is very reactive with organic molecules and, therefore, must be given with water on an empty stomach. Because of the belief that better absorption is achieved if the acid medium of the stomach is neutralized by administration of 2 gm. of sodium bicarbonate, Gellhorn, Kligerman, and Jaffe [24] follow this regimen.

It is our present custom, although this varies with the individual patient, to administer 5 mg. of the compound with no less than a half glass of water one to two hours before breakfast every other day for three doses. Daily leukocyte counts are made, and the dose may be further separated or omitted if leukopenia is marked, i. e., if the leukocyte count is below 3,000 in most cases or below

2,000 if there is a subnormal count prior to therapy. Then, after a two to three week interval, therapy is resumed, if the leukocyte count permits, with a dose of 5 mg. every week, or rarely twice a week, to 5 mg. every two weeks. It is wise to obtain a leukocyte count before each dose, although we not infrequently omit this after having established high tolerance of the patient for the drug over a period of four to eight weeks with a maintenance dose. Ultimately, however, as with nitrogen mustard, there is a refractoriness to triethylene melamine.

Our results in Hodgkin's disease have been better than those in lymphosarcoma or lymphocytic leukemia, but some response has been noted in certain instances in all three types of disease. We have treated 34 patients, and results have been essentially similar to those reported by others and similar to those obtained with nitrogen mustard. The indications of general systemic disease with constitutional symptoms or failure of response to roentgen therapy are the same as those acceptable for nitrogen mustard therapy.

Nausea and vomiting have been rarely encountered in our cases, and this is a great advantage over experience with nitrogen mustard. Serious toxicity with marked thrombocytopenia, leukopenia, and anemia occurred in a 59-year-old man with intra-abdominal Hodgkin's disease who had had a previous gastric resection for Hodgkin's disease of the stomach. This is the only patient in our series who experienced serious toxicity following use of the drug. Postmortem examination showed no hemorrhage and no lesions of Hodgkin's disease.

However, two young men, aged 32 and 24, died a month apart after triethylene melamine therapy of very extensive miliary tuberculosis. The first patient had had a diagnosis of Hodgkin's disease made in Munich in 1945. He received roentgen therapy in Germany, and he came to us in June of 1950 for swollen lymph nodes in the axillae and groins. He received roentgen therapy intermittently through June of 1951 with repeated benefit. However, by March of 1952, symptoms were more general, with pruritus, and he was given 15 mg. of triethylene melamine in three days and then 5 mg. weekly for four weeks with decided symptomatic improvement, including subsidence of severe back pain that had been associated with vertebral lesions. There was a weight gain of 6 lb. (2,722 gm.). He was advised to take a 5 mg. tablet of triethylene melamine weekly for an additional four weeks. He entered the hospital on May 4, 1952, after the development of high fever a week before with nausea and emesis. Chest roentgenograms showed mediastinal node enlargement and pulmonary infiltration. He received cortisone for 20 days, triethylene melamine in 2.5 mg. doses three times, the last dose the day before death, antibiotics, and two blood transfusions. A febrile course with maximum daily temperature of 101 F to 103 F persisted, and he died June 16, 1952. Postmortem examination showed not only Hodgkin's disease involving the liver, spleen, and mesenteric lymph nodes but also very extensive miliary tuberculosis involving the lungs, spleen, liver, lymph nodes, kidneys, bone marrow, and meninges.

The other patient had been under observation for Hodgkin's disease for 15 months in the hospital and outpatient department. Generally, his course was febrile. Following failure of satisfactory response to roentgen therapy, commencing June 8, he was given four 5 mg. doses of triethylene melamine and three doses of 2.5 mg. of triethylene melamine in a period of six weeks before death. A chest roentgenogram made 42 days before death showed some small patches of density in the lower left lung field. They were also present in a chest film made 40 days previously and were thought to represent foci of Hodgkin's disease. After the first four doses of triethylene melamine and 3,000 cc. of blood in five transfusions, the patient was improved, and superficial lymph node enlargement had largely receded. The temperature elevation recurred to 103 to 104 F, and he had a severe cough. He died on July 18, 1952, and postmortem examination showed not only extensive Hodgkin's sarcoma but also miliary tubercles in the liver and spleen and tubercle bacilli in the lung and kidney with possible miliary tubercles.

We are not in a position to implicate the triethylene melamine as affecting these developments, but for many years we have not seen Hodgkin's disease terminate with tuberculosis, despite Ewing's generally accepted dictum made in 1919 [25] that "in the material as gathered in New York where the disease is very common, tuberculosis follows Hodgkin's disease like a shadow." There is, however, one case reported by Gellhorn and Collins [26] in which miliary tuberculosis developed in a patient who received nitrogen mustard for the treatment of Hodgkin's disease, and it appears desirable to be alert to the possible disadvantage of this chemical therapy.

Although recognizing the great potential toxicity of triethylene melamine and the narrow range of safety, I am quite enthusiastic about this therapy in Hodgkin's disease, lymphocytic leukemia, follicular lymphoblastoma, lymphosarcoma, and to a lesser degree, reticulum cell sarcoma arising in lymph nodes. It appears to be very helpful in some patients without having some of the real disadvantages of nitrogen mustard. Hence, in most situations, I believe that roentgen therapy is best when there is localized disease, as long as it is effective, but that triethylene melamine is the most suitable therapy we have to date for generalized systemic disease, and that, by production of additional remissions after irradiation is ineffective, life is prolonged in many cases.

Recently, two drugs related to triethylene melamine, triethylenephosphoramide and diethylenephosphoramide, have been used in the treatment of malignant diseases, the former in the more recent experiments replacing the triethylenephosphoramide. The reports of Sykes and coworkers [27] and Farber and associates [28] in January, 1953, seem to indicate that the phosphoramides, although occasionally effective in Hodgkin's disease, lymphosarcoma, lymphocytic leukemia, and mycosis fungoides, cause the same manifestations of toxicity for the hemopoietic tissues as do triethylene melamine or nitrogen mustard with no greater therapeutic efficacy. That the triethylenephosphoramide can be given intramuscularly appears to be the only conceivable advantage for a rare patient in whom this route might be a necessity.

CORTICOTROPIN AND CORTISONE

With the introduction of steroid hormone therapy for many other conditions, it is not surprising that corticotropin (ACTH) and cortisone were also used for treat-

ment of the lymphoblastomas. Pearson and Eliel,[29] Stickney, Heck, and Watkins,[30] and Rosenthal and associates [31] have tried this therapy in Hodgkin's disease and the lymphosarcomas, and the effects have mainly been slight and transient, although, according to Rosenthal and associates,[31] occasionally cortisone or corticotropin may be effective when other types of treatment fail. It appears that we may conclude that other available types of therapy generally are more effective than steroid hormone administration.

SURGICAL TREATMENT

The employment of surgical methods for Hodgkin's disease and the lymphosarcomas has been advised in certain circumstances for many years. Yates [32] and Yates and Bunting [33] believed that in the early localized phase of Hodgkin's disease a wide excision of the nodes, followed by roentgen irradiation, was indicated. Their experience suggests that they were, in some instances, successful. Slaughter and Craver [7] have recently discussed this subject. In my experience in over 300 cases, however, I have never seen a case of Hodgkin's disease early enough or sufficiently localized that I thought that surgical excision of the cervical or other lymph nodes was indicated. The situation is different in lymphosarcoma and reticulum cell sarcoma and possibly rarely in follicular lymphoblastoma, where a localized mass may be demonstrated early before there is metastasis to other sites. Then surgical excision is clearly indicated, and I usually advise subsequent roentgen therapy to the affected site.

One patient, a 54-year-old white man, was admitted to the surgical service with respiratory symptoms and roentgenogram findings that suggested a pulmonary neoplasm (fig. 4). Although results of Papanicolaou studies were negative and the bronchogram showed no obstruction, pneumonectomy was done for a supposed carcinoma. Postoperative pathological study showed Hodgkin's granuloma. The patient was seen three months later on April 23, 1953, and was well with still no evidence of superficial node or organ involvement. Not enough time has elapsed, however, for evaluation of this type of treatment, and certainly this is not the indicated treatment for Hodgkin's disease of the lung. Incidentally, Versé [34] has reported that the lung is involved in Hodgkin's disease in 10% of cases. It has been our experience that roentgen therapy for Hodgkin's disease at this site is similar in effectiveness to therapy to other sites.

Surgical treatment is useful in another occasionally observed situation, however, both in Hodgkin's disease and in leukemia, i. e., when a complicating hemolytic process arises. When anemia rapidly recurs in a case of this type and the reticulocyte count is high and the fecal urobilinogen output excessive, cortisone or corticotropin therapy may be tried and found effective. However, if this therapy fails, then splenectomy is indicated, and the results may be very satisfactory, as in the following case.

A 26-year-old white farmer was admitted to the University Hospitals on May 20, 1950. He had noted in the autumn of 1947 "glands" in the right armpit that would reach acorn-size and then get smaller after two or three weeks. In the summer of 1948 enlarged lymph nodes appeared in the neck on the right side. In December, 1949, an acute swelling was noted in the right supraclavicular region, and biopsy from this site was done, with a resultant diagnosis of Hodgkin's disease. Roentgen therapy was administered to the neck and axilla at a local hospital. In the spring of 1950 he noticed fatigue and a rapid heart rate. He was told by his local doctor that his blood count was low, and he was given five transfusions after May 1, achieving from each symptomatic relief for four or five days. In recent weeks he had noted recurrent fever, night sweats, 3 or 4 lb. (about 1,500 gm.) weight loss and yellowness of the sclerae.

Physical examination showed a short man weighing 147 lb. (66.7 kg.) with yellowish, pallid skin and mucous membranes, scar of biopsy in the right supraclavicular region, icteric tint to sclerae, and small, firm, nontender, discrete axillary and inguinal lymph nodes. The liver could be felt 3 cm. and the spleen 2 cm. below the costal margin on deep inspiration.

Results of routine urinalysis were within normal limits. There was a hemoglobin level of 7.75 gm. (Leitz-photoelectric colorimeter), and 2,010,000 erythrocytes. There were 3,500 leukocytes, with 44% neutrophils and 46% lymphocytes. The reticulocyte count was 20%. The blood sugar and nonprotein nitrogen levels were normal. The blood Wassermann reaction was negative and the result of Hanger's cephalin-cholesterol

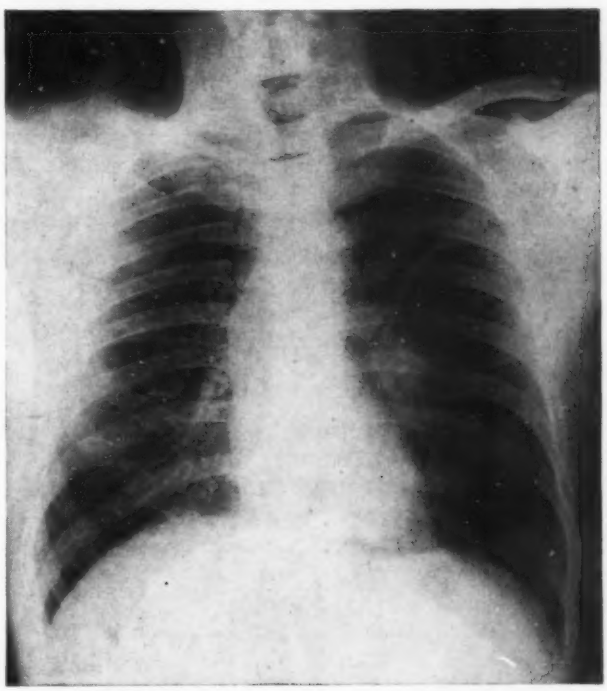

Fig. 4.—Roentgenogram of the chest before surgical intervention. A nodule can be seen in the midfield of the left lung.

flocculation test was normal. The result of the Coomb's test was positive and the platelet count was 263,000 per cubic millimeter. On biopsy the bone marrow was extremely hyperplastic. The fecal urobilinogen level was 1,000 Ehrlich units per 100 gm. of feces and 609 mg. in a 24 hour specimen. The icterus index was 14.0. The van den Bergh test indicated a total bilirubin level of 1.8 mg. per 100 cc. The fragility of the erythrocytes was normal.

Eleven transfusions of 500 cc. of blood were administered, including the last on the day of splenectomy, June 24, 1950, which was performed since it seemed obvious that the patient had a hemolytic anemia. His postoperative course was uneventful, and he left the hospital improved. He was to return in six weeks but did not return until Oct. 26, 1950. He had been completely well in the interval without treatment, and the hemoglobin level was 15.4 gm. There were 4,790,000 erythrocytes. The leukocyte count was 10,950, with 70% neutrophils and 20.5% lymphocytes. Similar levels were maintained for a year thereafter. In September, 1952, however, he had a febrile course and appeared to have recurrence of the hemolytic process. Cortisone administration, roentgen therapy, and treatment with triethylene melamine have had but slight value, and his condition has continued to deteriorate.

It was difficult to maintain suitable hemoglobin and erythrocyte levels in this patient during the original hospital admission because of excessive hemolysis. It appeared to us that this was reversed by the splenectomy; the patient was very much improved, with normal blood levels, and he was able to carry on his work as a farmer for more than a year thereafter.

MISCELLANEOUS MEASURES

There are a variety of other measures for the treatment of Hodgkin's disease and the lymphosarcomas, and they include chicken anti-Hodgkin's-tissue antiserum, which has been used by Utz and Keating [35] and by Pulvertaft,[36] but Barrett and Bone [37] found the reactions severe and occasionally dangerous. The antireticulocytotoxic serum of Bogomoletz has been used, but Hoster and Dratman [8] reported that the results have been poor.

Colchicine therapy has been advised from time to time, since this chemical inhibits mitoses, but it would appear that better therapeutic measures are available. A most recent report concerns four patients treated by Isch-Wall,[38] who, with repeated lymph node punctures, demonstrated a decrease in Sternberg-Reed cells and clinical improvement following the intravenous administration of colchicine.

Aside from the more or less specific therapeutic measures discussed above, it is advisable to give blood transfusions when necessary. Antibiotics should also be administered for treatment of intercurrent infections or prophylactically when indicated in the treatment of any of the lymphoblastomas. Analgesics should be freely administered when required.

Simple measures for the improvement of the patient's general health are too often ignored. Thus, attention to the diet, which should contain 3,000 or more calories, be well rounded, and contain an adequate supply of vitamins, is clearly indicated in all of these cases. Weight gain in some of these patients is of very great value as a morale builder. When anemia is present, which is usually hypochromic or normochromic, administration of iron is desirable; administration of liver extracts and vitamin B_{12} is usually not indicated and, therefore, wasteful.

Of real importance is maintenance of the morale of patients with these malignant diseases over the years. It is a vital part of the physician's job. In discussing the situation with the patient, I tell him that he has a disease of the lymph nodes, and, if pressed, I may speak of it as a tumor of the lymph nodes, the cause of which is unknown. The laity are now so well educated, and so often the patient has had an acquaintance or friend who has died of Hodgkin's disease, that I no longer use that term at the bedside but substitute the name, "lymphogranulomatosis." When it is necessary, I tell the patient that usually a cure is not possible—no more than in diabetes mellitus or pernicious anemia, where insulin or liver extract may have to be given for the rest of the patient's life—but that we can be of help. We advise that we would like to see the patient at certain intervals, and that we can give treatment of one type or another as necessary. A sincere, cheerful, and optimistic attitude in dealing with these patients is of great value. In the meantime, he may carry on his occupation and lead a normal life when he feels well. I have never had reason to believe that the limiting of reasonable activities for these patients when they were free of symptoms was beneficial, and I allow them much freedom.

When pressed to offer a prognosis, as happens in the rare case, I carefully avoid giving any statistics on mortality or even average figures. Many years ago, I had the unfortunate experience of giving average figures to a scientist with aleukemic leukemia. When the time of the cited average figure of two and a half years approached, the patient's morale was extremely bad and he died within a month of the prophesied survival time for the average patient. If, as is rare, I am pushed too hard, I cite the case of a patient whom we followed for 25 years or the case of the boy that I recorded earlier in this paper.

Finally, I freely admit great ignorance about the prognosis in the individual patient with Hodgkin's disease, lymphosarcoma, follicular lymphoblastoma and reticulum cell sarcoma, based on the findings at the time of the initial examination. Ordinarily the best guide is the response to the initial therapy in each case, and then a failure of satisfactory response is much more significant than a good response and it usually means, of course, a poor prognosis.

SUMMARY

Irradiation, triethylene melamine, and nitrogen mustard are usually the most effective therapeutic measures available for Hodgkin's disease, lymphosarcoma, follicular lymphoblastoma, and reticulum cell sarcoma. In most cases irradiation is the therapy of choice for all of them. Occasionally, with extensive systemic disease, nitrogen mustard or triethylene melamine, especially the latter, may be the therapy of choice in Hodgkin's disease; and, generally speaking, these compounds are more effective in the treatment of Hodgkin's disease than in any of the others. Follicular lymphoblastoma is ordinarily more responsive to roentgen therapy than the other three, and the prognosis is usually better. In the average case reticulum cell sarcoma tends to be most resistant, and the prognosis is the poorest, with an average duration of life about two years or less. Important adjuvants in the treatment of these patients include a high calory, well-balanced diet, administration of iron, transfusions as necessary, antibiotics at times, occasionally certain surgical measures, and the maintenance of a good morale by permitting reasonable activity during asymptomatic phases and by avoiding a pessimistic attitude and an ominous or specific prognosis.

The Goal of Medicine.—Research is increasing man's understanding of his powers and is continuing to probe the dark recesses of unexplored territory. Its benefits need to be extended to the common people throughout the world. This becomes a matter of organization and education. The direction which science and its benefits will take depends largely upon the philosophy of medicine. Medical research thrives best in an atmosphere of freedom. The enduring satisfactions are most likely to be attained in a social order that offers the individual the greatest opportunity for self development. Medical research contributes to the quality of human living, the protection of the family, and the enhancement of social progress. The goal of medicine is to enrich human lives. There are men who lift the age in which they live in such a way that all men walk on higher ground.—E. L. Bortz, M.D., Making Life Longer and Better: Medical Potentialities, *Geriatrics*, September, 1953.

SIMULTANEOUS SIGMOIDOSCOPY AND BARIUM ENEMA

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A critical consideration of diseases of the large colon supports our belief that whenever a barium enema or sigmoidoscopy is indicated for diagnosis, the other is equally desirable. Both procedures have overlapping and supplementary spheres of applicability.

The direct visualization and easy access afforded by the use of the sigmoidoscope is of definitive value. Beyond the view offered by the use of the sigmoidoscope, barium studies with fluoroscopy and roentgenography are necessary. Barium studies of the rectum contribute little to diagnosis.[1] Inflammatory and ulcerative disease of the large colon may, in the early stages, be confined to the rectum. In idiopathic ulcerative colitis, the rectum and lower sigmoid colon are involved in 95% of the cases of this disease. A large percentage, 60 to 75%, of colonic tumors occur in areas of the lower bowel accessible to the sigmoidoscope.[2] Spastic phenomena and functional colitis involving the sigmoid and rectosigmoid areas may be indistinguishable from organic changes when roentgenography exclusively is employed.[3] In any screening program for cancer prevention and cancer detection, the value of sigmoidoscopy alone is undeniable.[4]

It appeared feasible to conduct sigmoidoscopy and barium enema studies at a single session. Eleven persons referred routinely to the radiology department for barium enema studies consented to receive simultaneously a sigmoidoscopy and barium enema. As a result of our experiences the following technique was evolved.

PROCEDURE

The patient is routinely prepared for barium enema by means of laxatives the preceding night and adequate cleansing enemas the morning of the examination. He reports to the x-ray department where the proctologist has made available his portable diagnostic equipment. The pertinent case history is reviwed by both the radiologist and the proctologist. The patient, after being familiarized with the procedure, assumes the Sims' position on a horizontal fluoroscopy table. The anal area, anal canal, and lower rectum and anatomically related organs are routinely evaluated by means of inspection, digital palpation, and bivalve instrumentation. The proximal-light, 25 cm. sigmoidoscope is then passed the maximal distance feasible. Air inflation is used to ease its passage when needed. The sigmoidoscope should be passed, at least, to the rectosigmoid junction, a distance of 10 to 18 cm. from the anus. In our experience, the sigmoidoscope more frequently can be passed the entire 25 cm. under direct vision (fig. 1). The patient is directed and assisted in turning slowly to a supine position with the sigmoidoscope held lightly in position (fig. 2). The light carrier is removed and replaced by a perforated rubber stopper through which a metal tube is inserted. This metal tube is connected to the barium enema can by means of the customary rubber tube and cutoff valve. The barium is permitted to flow under fluoroscopic control. It flows rapidly with very little discomfort to the patient. A flat plate of the abdomen is taken with the scope and barium in place, while the patient lies immobile on the table (fig. 3). The scope is then removed and the patient positioned according to the requirements of the case (fig. 4). In instances in which the anal sphincter is incompetent, it is particularly helpful to keep the sigmoidoscope in position to avoid premature evacuation of the barium before radiographs are taken. The following case is illustrative.

REPORT OF A CASE

A 33-year-old salesman had an eight year history of chronic idiopathic ulcerative colitis with repeated fluctuations in severity. He had numerous hospital admissions for treatment as a result of these exacerbations. He had been studied repeatedly by means of sigmoidoscopy and contrast enemas and had understandably become resistant to further examinations. He was quite amenable to the suggestion that combining the two pro-

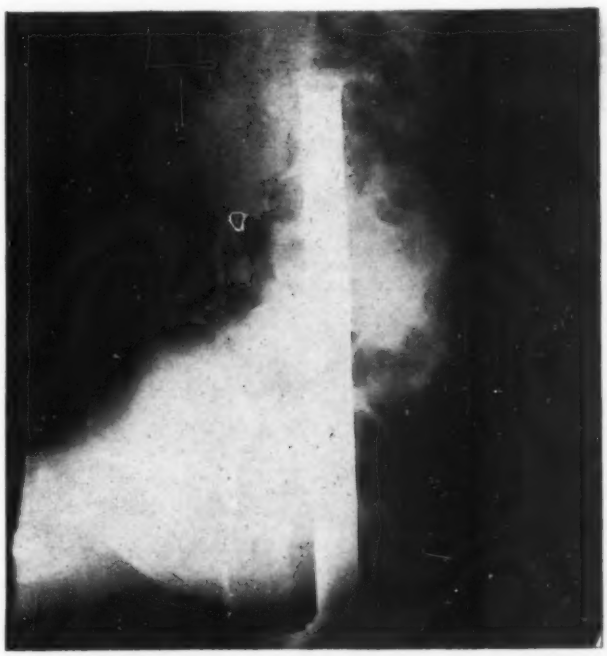

Fig. 1.—With the sigmoidoscope passed 25 cm., its relation to the skeletal structures is apparent.

From the medical and radiology services of the Veterans Administration Hospital, Bronx, N. Y.

1. Levene, G., and Vele, N. C.: The Inadequacy of Routine Barium Enemas for the Roentgenologic Examination of the Rectum, Am. J. Digest. Dis. **18**: 175-181 (June) 1951.

2. Bockus, H. L., and others: Gastro-Enterology, vol. 3, Small and Large Intestine and Peritoneum, Philadelphia, W. B. Saunders Company, 1944, p. 438.

3. Bockus, H. L., and others,[2] p. 491.

4. Runyeon, F. C.: Sigmoidoscopy: Its Clinical Importance to the Practitioner, J. A. M. A. **147**: 913-914 (Nov. 3) 1951.

cedures would reduce his discomfort. After the combined procedure was completed, he expressed great satisfaction at the ease with which it was performed and the minimal discomfort to himself. The findings were as follows. The large colon from

Fig. 2.—Sigmoidoscope in same position as in figure 1; anteroposterior view taken after rotation of patient into supine position. Excess air present in rectum and sigmoid soon evacuates.

cecum to anus was narrowed and shortened and showed mucous membrane roughening and loss of haustral markings. Clearly pictured on the roentgenograms were numerous punched-out negative shadows characteristic of polyps in the sigmoid and

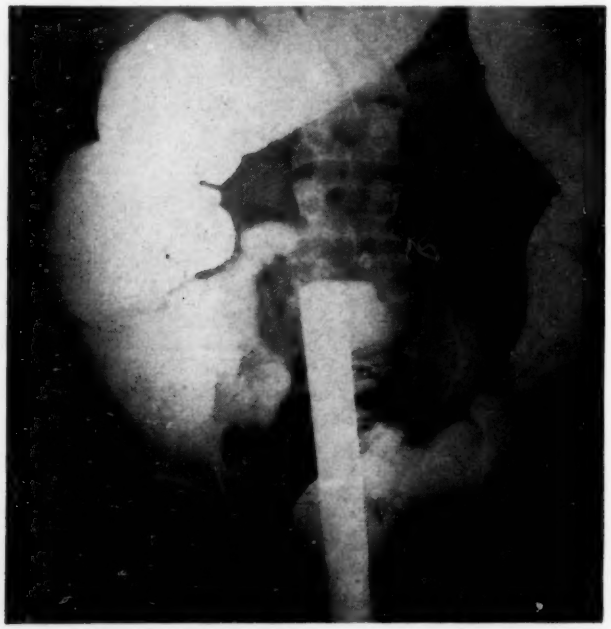

Fig. 3.—Appearance after entire colon is filled with barium instilled through the sigmoidoscope. The instrument in this case passed just beyond the rectosigmoid junction.

upper rectal areas. The sigmoidoscope was passed 20 cm. into the lower sigmoid and the abnormalities definitely evaluated. The mucous membrane was diffusely thickened and edematous, with pale, thick scarring throughout. The membrane was friable to trauma, though no active ulcerations were apparent. Many sessile polypoid excrescences of varied sizes were scattered about. The chronic inflammatory indurative process distorted the crypts and columns in the anal canal and caused multiple fissuring of the crypts and anal skin. The study was a success both technically and administratively in expediting the patient's physical examination.

COMMENT

The advantages of the simultaneous procedure are many. Two procedures essential for complete diagnosis are accomplished at one session, and the delay attendant on two separate appointments is avoided. Mutual consultation at the time of examination permits special studies and refinements of technique. The preparation of the patient for both examinations is usually the same. By combining both procedures, a single preparation reduces the patient's discomfort. Sigmoidoscopy does not interfere with the barium enema. In fact, the barium enema

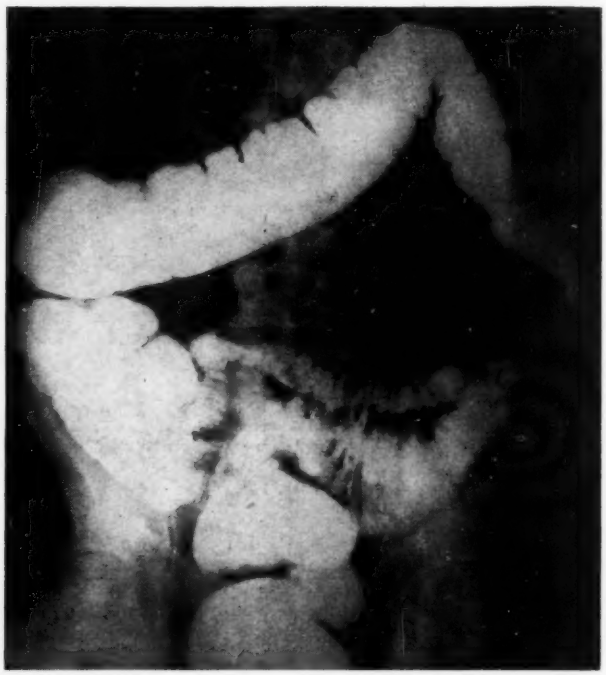

Fig. 4.—The same as shown in figure 3 but with the sigmoidoscope removed permitting the barium mixture to enter the rectum.

is facilitated by the passage of the sigmoidoscope past the rectosigmoid junction. Since the barium enema passes through the tube directly into the lower sigmoid, distention of the rectum is avoided, and so a painful and strong evacuatory reflex is much less likely to be experienced by the patient. The discomfort of the combined procedure is less than the total discomfort of two separate examinations.

A possible disadvantage is the greater time devoted to the combined examination. We feel, however, that the advantages mentioned above would outweigh this factor. The bypassing of the rectum and lower sigmoid when the barium is instilled through the sigmoidoscope interferes with fluoroscopic visualization. This loss is offset by the fact that these regions have already been inspected under direct vision and that, after the removal of the sigmoidoscope, barium fills these areas and permits

adequate radiographic studies. In our experience, air used to ease the passage of the sigmoidoscope has not interfered with examination. There is a possible hazard to the patient in moving from the Sims' position to the supine position with the sigmoidoscope in place. Careful sigmoidoscopy and the great mobility of the lower sigmoid colon reduces this danger to negligible proportions. Biopsies should not be attempted during the combined procedure. This measure is best delayed until the total large bowel findings are known, for this knowledge would determine what further diagnostic measures are indicated.

SUMMARY AND CONCLUSIONS

The value of both sigmoidoscopy and barium enema is presented. It is suggested that whenever one is indicated the other is also desirable. The technique of the combined procedure is presented as a practical measure in the diagnostic investigation of large colon disease.

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INCARCERATED AND STRANGULATED INGUINAL HERNIA IN INFANTS: A PREVENTABLE RISK

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In 1940 Dr. William E. Ladd summarized his many years of experience with inguinal hernias in infants and children and indicated that in the absence of intercurrent disease he had operated on these young patients at any age they came to him and had no reason to regret this policy.[1] Today this forthright plan is not sufficiently widely practiced, and the incarcerated and strangulated inguinal hernia is still one of the commonest causes of intestinal obstruction in infancy. In the interest of gaining more widespread and enthusiastic support for the early surgical cure of ruptures in infants and children, a study has been made of 940 patients with indirect inguinal hernia, 69 of whom had irreducible incarceration or strangulation when they came for treatment.

A small infant with imperfect obliteration of the processus vaginalis at the internal inguinal ring presents one of the commonest abnormalities of early life. Two per cent of full-term infants and up to 25% of viable premature infants may be so afflicted.[2] The optimum management of such a patient, therefore, constitutes a problem common to physicians, who must, in the best interest of their patient, choose between immediate surgical treatment and so-called conservative or truss management.

The yarn truss served its purpose well in an era when the morbidity and mortality of elective surgery in infants was high. While it is useful as an interim measure, truss treatment not only has failed to provide a permanent cure but does not protect the patient from the serious complications of the defect for which it was specifically designed. In addition, one cannot wholly disregard the fact that anxious parents are being called on to endure the vagrancies of truss treatment with all its attendant nuisances. The small patient is subjected to the chafing and limited activity associated with a snugly applied truss and to the innumerable episodes of minor incarcerations that reduce spontaneously but are certainly not painless nor harmless episodes. The physician may find himself fidgeting unhappily with a few strands of white woolen yarn while he waits for his small charge to attain a suitable size for surgical treatment. The morbidity to all concerned, both in the home and in the office, far outweighs that of patients actually admitted to the hospitals for an operation that is now widely available, and when skillfully executed is simple with dangers reduced to a minimum.

CLINICAL SUMMARY

There have been 940 patients subjected to herniorrhaphy for indirect inguinal hernia at the Children's Hospital during the seven year period from January, 1946, to January, 1952 (table 1). Of these, 134, or approximately 14%, of the children were admitted because of the presence of an incarcerated or strangulated hernia. Fortunately, in 65 instances a spontaneous reduction could be achieved in the emergency room, or within a short period after admission to the hospital, by using sedation, deep Trendelenburg position, cold packs, and

TABLE 1.—*Summary of Cases of Indirect Inguinal Hernia*

	Number
Total cases	940
Incarcerated or strangulated at time of admission	134
Reduced spontaneously after admission	65
Required emergency operation	69

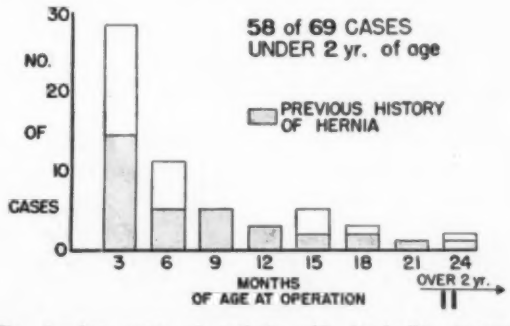

Fig. 1.—Age range of patients with irreducible incarceration or strangulation of indirect inguinal hernia.

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1. Ladd, W. E.: Hernia in Infancy and Childhood, Nebraska M. J. **26**: 235, 1941.

2. Hess, J. H.: Physical and Mental Growth of Prematurely Born Children, Chicago, University of Chicago Press, 1934, pp. 449, 424.

the gentlest of taxis. The remaining 69, or approximately 7%, of these patients were of necessity subjected to an emergency herniorrhaphy because of irreducible incarceration, strangulation, and in most instances, clinical or radiographic evidence of intestinal obstruction.

Thus, in this group of 69 cases the operation itself was done as a lifesaving procedure, the patients already having experienced the most serious complication of their disorder. Of particular importance is the fact that more than half of these patients were previously known to have a hernia and had received no treatment, or were actually wearing a truss. Some had even suffered previous episodes of incarceration that required reduction by a physician.

The age range of these patients is of particular interest since 39 of these 69 were less than 6 months of age, 19 additional patients were less than 2 years of age, and only 11 were between the ages of 2 and 15 years (fig. 1). Sixty-six of the patients were boys and only three were

Fig. 2.—Three-year-old Negro child with three day history of vomiting and abdominal pain. The tense, inguinal mass in such an older child is unmistakable. In well-nourished infants, however, it may be obscured by fat and readily overlooked.

girls. Incarceration of an ovary in a female infant has been reported previously [3] and occurred in two of the three patients in this group. The right side was involved 64 times, and the left side was involved five times. Other authors have reported a similar right side involvement in 75 to 80% of their patients.[4]

Symptoms and Signs.—The common symptom complex was irritability, apparent pain, and vomiting. These were present in 46 of the 69 patients. Obstipation for 24 hours or more occurred in at least seven instances, and gross blood was present in the stool of two patients at the time of admission. The average duration of the incarceration or strangulation, as judged from the onset of symptoms, was 16 hours. The mean duration was 12 hours.

3. Schiebel, H. M.: Inguinal Hernia in 3-Month-Old Infant Containing Adnexa, J. Pediat. **36**: 646, 1950.

4. Thorndike, A., Jr., and Ferguson, C. F.: Incarcerated Inguinal Hernia in Infancy, Am. J. Surg. **39**: 429, 1938.

On examination at the time of admission, a lump or mass was present in the inguinal or scrotal region of each patient (fig. 2). This mass was usually somewhat tender and often surrounded by edema and reddening of the

Fig. 3.—Roentgenogram showing the dilated stepladder appearance of high-grade mechanical obstruction due to strangulated right inguinal hernia. Gas shadows are visible in the inguinal canal and upper scrotum.

overlying skin. In several instances, however, it was movable, nontender, and readily transilluminable, so that the differential diagnosis between a symptomatic tense hydrocele and an incarcerated hernia should be decided

Fig. 4.—Three-week-old premature infant with 10 hour history of colicky pain and vomiting bile-stained material. Bilateral scrotal swellings had been noted six days previously. Note nasal tube for gastric suction and the polyethylene catheter properly placed in the right saphenous vein.

at the operating table. Examination of the testes was usually recorded as normal, but in some instances it was swollen and hard. This is a point of some diagnostic aid, since such signs are manifestations of venous engorge-

ment due to obstruction of the spermatic veins and lymphatic channels at the internal ring by the tightly strangulated mass.

X-Ray Findings.—Abdominal distention, tympany, and borborygmi were commonly present, and, when the abdomen was studied by roentgen examination, the findings were often those of a high grade of small bowel obstruction. Frequently, gas and fluid levels could be seen within the confines of the inguinal canal and scrotum as well as throughout the abdominal cavity (fig. 3).

Laboratory Findings.—The routine laboratory findings were of little importance except in the evaluation of a severely dehydrated and acidotic infant. The white blood cell counts ranged from 4,600 to 21,000 and were elevated above 10,000 in 40 of our 69 patients at the time of admission. However, there did not seem to be any absolute correlation between the high leukocyte counts and the state or degree of vascular damage suffered by the entrapped bowel described at the operation.

MODE OF THERAPY

The management of the infant prior to surgery varied considerably and was dependent on the condition of the patient and the judgment of the surgeon. All patients were treated as surgical problems, and preoperative studies and preparations for surgery were initiated at the time of admission. As this study progressed, it became apparent that there were no instances of serious damage to the blood supply of the bowel in patients who had had symptoms for less than four hours. Therefore, when a reliable history, as far as time was concerned, could be obtained and the physical findings were consistent with the history, an effort was made to achieve a spontaneous reduction of the hernia with sedation, Trendelenburg position, and gentle taxis. There were no deaths or serious morbidity associated with such a procedure when this four hour rule was used. Indeed, it was our experience that any hernia that reduced spontaneously with morphine and Trendelenburg position, but without taxis was most certainly viable regardless of how long the patient appeared to have been suffering from his incarceration. If such a reduction could be obtained, it seemed highly desirable, since certainly such patients were poorly prepared for surgery and it would serve their interest better to achieve a spontaneous reduction and to carry out an elective herniorrhaphy a day or two later.

If the hernia did not reduce within one hour or if, in the judgment of the surgeon, nonoperative reduction was contraindicated, the patient was prepared for surgery. Gastric suction was instituted and continued throughout the operative and precarious postoperative period. An appropriate needle, or if necessary, a more reliable small bore polyethylene tube was inserted into a peripheral vein for the administration of fluid, electrolytes, blood, and chemotherapeutic and antibiotic agents (fig. 4). These important steps not only provided for the preparation of the patient for surgery but also proved to be important safety factors designed to avoid aspiration of retained gastric contents during anesthesia and to render a reliable means of administering fluids and blood during a deliberate surgical procedure that occasionally included a bowel resection. Atropine was administered routinely, and sedation was given when indicated in older infants and children.

The Operation.—Open drop vinyl ether and oxygen anesthesia was commonly employed. Local infiltration of 1% procaine hydrochloride (Novocaine) or 0.5% Zylcaine (local anesthetic product containing procaine, butesin, and benzyl alcohol in purified peanut oil) was rarely relied on. Recently, endotracheal intubation has been practiced and in experienced hands has proved eminently satisfactory. There have been no anesthetic fatalities.

The surgical incision was in most cases the conventional oblique herniotomy incision, although the transverse skin-fold incision also provided adequate exposure and is now preferred by most surgeons. After incising the fascia of the external oblique, an effort was made to gently tease apart the cremasteric and spermatic muscles and fascias and open the hernial sac. This permitted the surgeon, in most instances, to deliver the incarcerated mass, to inspect it, and to assure himself that the bowel was viable before returning it to the general abdominal cavity. In 35 of the 69 patients there was indisputable gross evidence of strangulation of the entrapped bowel. Cyanosis, edema, and ecchymosis of the bowel wall and the mesentery and straw-colored peritoneal fluid were noted in 20 of the patients. Deep red to black discoloration of the bowel wall and serosanguineous peritoneal fluid were found in 11 instances. In four babies an involved ileum and/or ileocecal area were noted to be badly damaged or probably gangrenous when first inspected. After enlarging the internal ring and thus relieving the constricting pressure, however, the appearance of the bowel improved sufficiently so that only one intestinal resection was deemed necessary.

After consideration of the hernial content the hernial sac was removed and the neck of the peritoneal sac closed at the internal ring. The method of repair of the inguinal canal and the choice of suture material varied. In most instances a simple approximation of the fascia of the external oblique or a modified Ferguson repair, as advocated by Ladd and Gross, was relied on.[5] Care was taken not to close the external ring tightly, because postoperative edema of the cord structures was anticipated. In no instance was the cord transplanted.

MORTALITY AND MORBIDITY

The only mortality in this series of 940 cases was that of a 3-month-old, 6 lb. (2,721 gm.) premature infant with a 48 hour history of intestinal obstruction. He succumbed to peritonitis following the perforation of a necrotic portion of the terminal ileum on the fourth postoperative day. The hospital morbidity was rather high, and the average period of hospitalization varied from

5. Ladd, W. E., and Gross, R. E.: Abdominal Surgery of Infancy and Childhood, Philadelphia, W. B. Saunders Company, 1941.

four to seven days for the 54 patients that underwent emergency herniorrhaphy, compared with the usual two or three days for those subjected to elective herniorrhaphy (table 2). In two instances prolonged melena and signs of peritoneal irritation complicated the postoperative course and were presumed to have resulted from a sloughing and ulceration of the mucosa and perhaps a portion of the wall of previously strangulated bowel. Ileus with distention and intermittent vomiting that required prolonged periods of gastric suction were present in 12 patients. Bronchopneumonia, presumably due to aspirated intestinal contents, occurred three times in patients in whom gastric suction was not insisted on. The postoperative course was frequently associated with temperature elevations for 24 to 48 hours or more.

COMPLICATIONS

In addition to the immediate hospital morbidity there have been serious late complications, including testicular atrophy and recurrent hernia (table 2). We have become particularly interested in testicular damage and have noted it at the operating table in three patients. In two instances a black swollen testis was biopsied and a decompressive capsulotomy performed with the hope of immediately improving the circulation to the parenchyma. The biopsy specimens were consistent with complete necrosis, and atrophy subsequently followed. There have been three additional patients in whom atrophy was not noted until some weeks or months later, making a total of 5 of 69 patients in whom testicular atrophy, presumably due to necrosis following strangulation of the testis, occurred as a complication of strangulated hernia.

TABLE 2.—*Morbidity and Late Complications of Irreducibly Incarcerated or Strangulated Indirect Inguinal Hernia*

	Number
Total cases	69
Prolonged hospitalization	54
Postoperative intestinal complications	12
Infarcted or atrophic testicle	5
Recurrent hernia	4

Although one would anticipate a postoperative recurrence rate in children subjected to elective herniorrhaphy to be less than 1%,[7a] the recurrence rate in these children on whom the herniorrhaphy was performed at the time of the strangulation has been 6%. In four patients a second operation was thus required before a satisfactory result was finally achieved.

COMMENT

Intestinal obstruction is the most serious complication of indirect inguinal hernia in infants and children. It is by no means the only one. Infarction and atrophy of the testis, an increased incidence of recurrence of the hernia, serious postoperative intestinal complications, and prolonged expensive hospitalization cannot be disregarded. All, however, are secondary to the incarceration and, in the majority of instances, to strangulation of a loop of bowel within the hernial sac in the first few months of the patient's life. The combined case mortality and morbidity is considerable. In most instances this morbidity and mortality is preventable by a simple, elective hernia operation done as soon as the diagnosis of inguinal hernia is established. Such a plan has long been accepted in established pediatric clinics in the British Isles [6] and more recently in this country.[7] In this series of 881 elective inguinal herniorrhaphies there have been no deaths and the average hospitalization varied from two to three days.

Thus, here is an opportunity for physicians who recognize the value of preventive medicine in reducing morbidity and mortality to recommend preventive surgery as well. One should seriously question the judgment of expectant or truss treatment of the inguinal hernia in an infant. A permanent cure from such management is practically unknown, and the hope for it is no longer justified. We must elect to strike at this disability before it is permitted to run its course of complications. Only intercurrent infection or concomitant abnormalities should interfere with the elective surgical repair of hernias in infants. Professional and hospital facilities are becoming widely available to deal successfully with this elective surgery in the diminutive patient. The operation can be a simple one, the risk is minimal, and the morbidity is slight. The results are most gratifying to patient, parents, and physician alike.

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6. Herzfield, G.: Hernia in Infancy, Am. J. Surg. **39**: 422, 1938.

7. (*a*) Gross, R. E.: The Surgery of Infancy and Childhood, Philadelphia, W. B. Saunders Company, 1953. (*b*) Potts, W. J.; Riker, W. L., and Lewis, J. E.: Treatment of Inguinal Hernia in Infants and Children, Ann. Surg. **132**: 566, 1950. Koop, C. E. (Children's Hospital of Philadelphia): personal communication to the authors. Swenson, O.: Inguinal Hernia and Hydrocele, 21st Annual Meeting, symposium, American Academy of Pediatrics, 1952.

Calcaneal Spurs.—Spurs on the os calcis are quite common, being seen most frequently on the plantar surface more toward the medial side than the lateral side. Less frequently, spur formation is noted on the posterosuperior portion of the os calcis. The spur on the plantar surface produces symptoms more frequently than those on the posterior surface. A diagnosis can usually be made clinically, but x-ray confirmation is required before any form of treatment is instituted. . . . At the time of the patient's initial visit the foot should be strapped in slight supination, thus changing the point of weight bearing on the os calcis. On the following visit, about one week later, a plaster mold is taken of the patient's foot, and a so-called spur foot plate made for insertion into the shoe. This plate is similar to the metal plate worn for flat or weak foot with the center of the metal portion of the heel cut out, thus eliminating weight upon the painful area. The rim of the excavation is lined with foam rubber, increasing the depth of the depression, and the entire plate is covered with leather. The patient should be referred to the laboratory for complete blood count, urine analysis, sedimentation rate, and blood uric acid determination. Any abnormalities found, which could possibly be contributing factors to the etiology, should be treated accordingly. If the above form of treatment fails to give relief, it may be necessary to remove the spur surgically under general anesthesia. The approach is usually through a linear incision on the medial border of the foot, giving adequate exposure to remove the spur with a mallet and chisel. Postoperative care consists of abstinence from weight bearing for a period of four to eight weeks. No plaster immobilization is required.—H. C. Fett, M.D., Orthopedic Management of Foot Disorders, *Surgical Clinics of North America*, October, 1953.

CONGENITAL PULMONARY STENOSIS

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Congenital pulmonic stenosis may be defined as consisting of structural changes in the subpulmonary tract, the pulmonic valve, or the pulmonary trunk that result in a gradient between the systolic pressure in the right ventricle and that in the pulmonary artery. From a developmental point of view, the valvular type of pulmonic stenosis may be the outcome of fetal endocarditis of the pulmonary cusps [1] or, as Gross has suggested, the result of maldevelopment of the arteries that supply the valves, with consequent infarction and fibrosis.[2] There is agreement on the embryology of infundibular stenosis; the idea of Keith is usually accepted that infundibular stenosis is due to an arrest of the normal involution of the bulbus cordis, which should form a part of the right ventricle by the end of the second month.[3]

ANATOMIC AND PHYSIOLOGICAL FACTORS

Anatomically, pulmonic stenosis usually is not an isolated malformation. As illustrated in table 1, it frequently exists together with other defects. The type of associated malformations influences the physiological pattern and, therefore, the surgical correction of the stenosis. Table 1 illustrates that when pulmonary stenosis is associated with a ventricular septal defect, the stenosis is usually of the infundibular type. Rarely is infundibular stenosis associated with a closed ventricular septum.[4] In the presence of an auricular defect, the stenosis is usually at the pulmonic valve.[5] There may be associated narrowing of the right ventricular outflow tract.[6] If there is neither an auricular or ventricular septal defect, the stenosis is usually at the pulmonic valve (fusion of valves). When there is overriding of the aorta, such as in the tetralogy of Fallot, the infundibular type of stenosis prevails; however, valvular stenosis, either alone or combined with the infundibular type, is frequently found in the tetralogy of Fallot (table 2).[7]

Because of the great importance of the type of stenosis, a more detailed description of what is meant by infundibular or valvular stenosis appears to be indicated. The anatomy of infundibular or subpulmonary stenosis has been described in detail by Mayer, Stoelker, Kussmaul, and others.[8] Recently, Edwards has summarized this problem in detail.[6] The subpulmonary tract is bounded by the right ventricle, by the ventricular septum, and by a muscle that separates the tract from the ventricular septal defect (fig. 1). This latter muscle is the crista supraventricularis. This subpulmonary tract, at times, may be very narrow (infundibular stenosis). It can be straight or slightly curved. There is no doubt that the subpulmonary tract plays an important role in obstructing the blood flow into the pulmonary artery. Johns, Williams, and Blalock, for example, believe it to be the primary source of obstruction in the infundibular type.[9] Brock, on the other hand, while admitting that the infundibulum is often hypoplastic, maintains that, as a rule, its effective lumen is adequate and that the actual stenosis occurs at one level within it and is linear and diaphragmatic.[7b] In addition to the narrowed outflow tract, therefore, there is a secondary, more complete stenosis similar to the one described by Keith.[3] This difference in interpretation of anatomic data is of considerable interest. If the subpulmonary tract has an effective lumen and if the stenosis is linear, infundibulotomy with dilatation may be practical; however, if the stenosis is a long narrow channel, this procedure is hardly adequate. One of us (W. R.) investigated the morbid anatomy of the subpulmonary tract by preparing paraffin casts of the cardiac cavities according to a technique patterned after the method of Hiffelsheim and Robin.[10] These casts permit good visualization of the relationship of the cardiac chamber and are particularly valuable in the estimation of the diameter of the subpulmonary tract including the stenosis that occurs within this narrowed chamber. Although the morbid anatomy of each individual heart with infundibular stenosis varies, some general statements may be made. Figure 2 represents a drawing showing the reverted funnel-shaped entrance into the subpulmonary tract of the right ventricle. In figure 3 the subpulmonary tract is opened, demonstrating that, in addition to the narrowing of this tract, resulting from hypertrophy of the muscle of its posterior wall, producing muscular stenosis there is also a secondary stenosis that is linear and diaphragmatic and that is composed of fibrous rather than muscular tissue. A similar pattern was found in most of the 25 specimens that we examined. In one case, this fibrous stenosis was absent (fig. 4). This specimen was from a child with fibroelastosis of the left auricle and ventricle.

A comparison of the narrowing in the subpulmonary tract caused by the fibrous stenosis and the muscular stenosis is of importance to the surgeon. If the fibrous stenosis is the main impediment to flow, infundibulotomy with dilatation may suffice. This may be possible in children in whom, according to Brock, the fibrous stenosis is the predominant obstruction fixing the ventricular walls and preventing their proper developments as the heart grows.[11] It is, therefore, not surprising that infundibulotomy has had good results in children.[12] In the adult, however, little can be accomplished by cutting this fibrous stenosis. The reason for this statement is illustrated in figure 5, which represents a photograph of a paraffin cast of the cardiac chambers of a heart with the tetralogy of

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Fallot. There is little difference in the internal diameter of the subpulmonary tract at the fibrous stenosis or caudal to it. Whether infundibular resection is able to overcome these difficulties with the removal of a mass of muscular tissue of the subpulmonary tract is still a controversial question. It is our impression, however, that frequently the effective lumen of the muscular stenosis is inadequate and that a great deal of muscle must be removed to widen the passageway.

The morbid anatomy of the subpulmonary tract in valvular pulmonic stenosis is different. Figure 6, which represents a paraffin cast of the cardiac cavities of a heart with valvular pulmonic stenosis and auricular septal defect, illustrates that, although muscular hypertrophy may exist, this does not result in the narrowing of the right ventricular outflow tract. It is not surprising, therefore, that valvulotomy is the operation of choice in this malformation.

In pulmonary stenosis without any associated septal defect, neither a right-to-left nor left-to-right shunt is present (fig. 7). Consequently, the arterial oxygen saturation is normal, and there is no appreciable gradient in oxygen content of blood from the venae cavae and the pulmonary artery.[13] When there is an auricular defect or a patent foramen ovale, the right auricular pressure exceeds that in the left during the whole cardiac cycle.[14] This results in an intracardiac right-to-left shunt, with reduced oxygen saturation of arterial blood and cyanosis (fig. 8). In the tetralogy of Fallot, the overriding aorta, together with the narrow subpulmonary tract determine the course of the circulation. The intracardiac shunt is predominantly from right to left, and the right ventricular pressure is elevated above the pulmonary artery pressure (fig. 9).[15] The degree of overriding is of surgical importance. Taussig has stated that all of 17 patients, in whom the aorta overrode the ventricular septum by more than 50%, died at, or shortly after, operation, from acute pulmonary edema or severe pulmonary congestion.[16] With extreme dextroposition of the aorta, the left ventricle cannot discharge the increased amount of blood which is shunted through the lung by means of the artificial ductus. As a result the residual volume in the left auricle and ventricle increases and pulmonary congestion develops. On the other hand, the construction of an artificial ductus leads to right-sided failure in the presence of pulmonary stenosis associated with an auricular septal defect. The rise in left auricular pressure associated with increased inflow load results in a diminution of the pressure gradient from the right to the left auricle; the right auricular pressure rises, leading to elevated venous pressure and right-sided failure.

The clinical and radiological findings in pulmonic stenosis are the outcome of the morbid anatomy and physiopathology. The presence of cyanosis will depend on the existence of a right-to-left shunt. This is usually present when the stenosis is associated with an auricular or ventricular septal defect and when the aorta overrides. In cases of isolated valvular pulmonic stenosis without either ventricular or auricular defect, cyanosis is absent, except in the terminal stages of the disease. Since the pressure and flow in the pulmonary artery are diminished, radiological examination will reveal clear lung fields.[17] When the stenosis is at the valve, poststenotic dilatation of the pulmonary artery is usually present. The heart is larger than in the tetralogy of Fallot and a high systolic murmur and thrill are usually present. The maximal intensity of the murmur is in the second or first intercostal space to the left of the sternum. The clinical and radiological findings in pulmonic stenosis with auricular defect are similar, except for the presence of cyanosis resulting from a right-to-left shunt.[13] A left-to-right shunt is entirely absent. There is a poststenotic dilatation and the maximal intensity of the murmur is higher than in the tetralogy of Fallot.

In the tetralogy of Fallot, the heart is small, there is a convexity in the region of the pulmonary artery segment, and the lung fields are clear.[17] Since the right-to-left shunt predominates, cyanosis is present. Because the stenosis is usually low in the subpulmonary tract and possibly combined with fusion of the valve, a visible poststenotic dilatation of the pulmonary artery is usually absent. There is instead an infundibular chamber that represents the space between the fibrous stenosis and the pulmonary valve.

Reference was made in the preceding paragraphs to the important role played by anatomic and physiological factors in selecting operative procedures for the treatment of pulmonic stenosis. The success of surgical treatment can be objectively evaluated by clinical and physiological studies; however, either of these methods of evaluation alone can be misleading. Wishful thinking too often colors clinical judgment. On the other hand, physiological findings, objective as they are, mean little if they are not paralleled by clinical impressions.

There is no doubt that valvulotomy is the method of choice in the treatment of isolated pulmonic stenosis or in valvular pulmonic stenosis accompanied by an auricular septal defect. The anatomic and physiological rationale for this operation has been discussed. The clinical improvement following this procedure is undisputed.[18] The physiological changes following this operation have been described by Soulié and associates.[5a] These authors mentioned a fall in right auricular pressure following valvulotomy in five out of nine patients. The right ventricular pressure diminished; the decline was quite rapid following operation but tended to become slower as time progressed. In two patients, the right ventricular pressure fell below that in the left ventricle. Pulmonary artery pressures rose slightly without ever approaching the pressure in the right ventricle. The configuration of the pressure in the pulmonary artery approached normal. Changes in pulmonary flow were inconsistent, but usually the right-to-left shunt diminished slightly.[5a]

CLINICAL OBSERVATIONS

Physiological data collected on patients studied at the Johns Hopkins Hospital show a similar trend (table 3). Of 10 patients studied, 4 had isolated valvular stenosis. In the remainder there was an associated auricular defect. The right ventricular pressure fell in all but one patient and pulmonary blood flow increased in 8 out of 10 patients in whom it was recorded. The peripheral oxygen saturation rose in all patients with auricular septal defect.

The clinical results following the construction of an artificial ductus in patients with the tetralogy of Fallot have been described in detail by Taussig.[16] The mortality at six months after operation was 16%. Cardiac failure,

as well as subacute bacterial endocarditis, were infrequent complications. The result of the operation seemed to depend somewhat on the age of the patient, and the best results were obtained in the age group from 5 to 15 years. The failure of most hearts to enlarge after the construction of an artificial ductus needs special comment, because the operation increases left ventricular load. Data, to be published, indicate a postoperative rise in oxygen tension of the coronary vein indicating an increase in the myocardial oxygen tension. It is possible that this factor has a part in the postoperative adjustment of the heart.

Tables 4 and 5 illustrate the physiological data obtained during the preoperative and postoperative periods on patients with the tetralogy of Fallot. In all patients an artificial ductus was created by Dr. A. Blalock at Johns Hopkins Hospital. The oxygen content of the blood from the right auricle fell in all but three of 14 patients after operation (table 2). This fall in oxygen content was probably the result of a decrease in oxygen capacity of the blood after operation. For this reason, one might also expect a decline in the oxygen content of the blood from the right ventricle; however, this occurred only in 7 out of 14 patients (table 4). In the remainder the oxygen content of the blood of the right ventricle either rose or remained at its preoperative level. It is conceivable that the rise of oxygen content in the right ventricle is due to increased intracardiac left-to-right shunting. Such a shunt might also be responsible for the elevation in right ventricular pressure, which was observed in five out of nine patients (table 5). In all patients but one, the ratio of effective pulmonary flow to systemic flow increased postoperatively, and the peripheral oxygen saturation rose. In most instances there was a fall in the net right-to-left shunt and an increase in the net left-to-right shunt (table 4).

Physiological data obtained before and after infundibular resection in the tetralogy of Fallot are still scarce; however, Bailey and Glover used the infundibular resection in 42 patients with the tetralogy of Fallot; 22 had infundibular stenosis.[19] In patients who were catheterized postoperatively, there were still marked changes in the gradient between the systolic pressures in the right ventricle and the pulmonary artery; however, the clinical results were, for the most part, satisfactory and even dramatic. It is hoped that future physiological studies will justify some of the optimism evoked by these clinical observations.

SUMMARY

The anatomic and physiological findings in congenital pulmonary stenosis are described, and their implications for surgical treatment are discussed.

The finding of Brock confirmed that, in infundibular stenosis, narrowing of the subpulmonary tract results from muscular and fibrous obstruction. Paraffin casts of the cardiac chambers showed that, in infundibular stenosis, muscular structures are primarily responsible for the narrowing of the subpulmonary tract. The fibrous, diaphragmatic stenosis contributed only little to further narrowing of the right ventricular outflow tract. In valvular pulmonic stenosis, there was no narrowing of the subpulmonary tract despite the existence of muscular hypertrophy. In pulmonary stenosis without associated septal defect, no intracardiac shunts were present. In pulmonary stenosis with auricular defect or in the tetralogy of Fallot, the shunt was predominantly from right to left. Pressures in the right ventricle were elevated in these malformations. Valvulotomy, performed in patients with valvular pulmonic stenosis, was followed by a fall of pressure in the right ventricle and increased pulmonary blood flow. After construction of an artificial ductus in patients with tetralogy of Fallot, the oxygen content of the blood of the right auricle diminished. Evidence of increased left-to-right intracardiac shunt was obtained from increased oxygen content of the blood from the right ventricle and from elevated pressures in the right ventricle.

DEFECTS OF THE CARDIAC SEPTUMS

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A decade ago our knowledge of congenital heart disease was based primarily on the morphology of the malformations and on empirical observations permitting the establishment of clinical patterns and criteria for diagnosis, such as characteristic auscultatory findings, specific electrocardiographic changes and roentgenographic configurations. The recently introduced methods of investigation, such as cardiac catheterization, angiocardiography, and oximetry, permitted a more direct insight into the dynamic alterations that were brought about in these remarkable experiments of nature and thereby helped to place the diagnostic approach to congenital cardiac disease on a more comprehensive and rational basis.

Although the clinical syndromes associated with defects of the ventricular septum and of the atrial septum were recognized a long time ago, a diagnosis of septal defect was in the past considered acceptable because of the many similarities between the two types of septal defects. Recently, however, it became more and more evident that a communication between the low-pressure atria has an entirely different effect upon the circulation than that between the high-pressure ventricles. Furthermore, the promise of availability of a direct surgical attack upon the problem of septal repair justifies a meticulous differential diagnosis between the two types of septal defects. The purpose of this presentation is to summarize the various features of the clinical syndromes associated with defects of the cardiac septums and to attempt the establishment of a basis for the selection of cases for the surgical repair of the defects. The discussion is limited to defects of the atrial and ventricular septums unassociated with other congenital malformations.

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DEFECT OF THE ATRIAL SEPTUM

The term atrial septal defect usually means developmental error in the formation of the atrial septum and does not include the very common incomplete sealing of the foramen ovale. Defects of the atrial septum show a very wide range in size, shape, and position. Multiple defects are not uncommon. The size of the defect varies from a widely patent foramen ovale unprotected by the valve, which may measure 1 cm. in diameter or more, to a very large defect, 5 to 6 cm. in diameter, in which case there is virtually a common chamber combining both atria. Actually, the trilocular heart with a single atrium can be considered a variant of the simple atrial septal defect, since one finds all degrees of transition between the two malformations and the dynamic changes in a large atrial septal defect are similar to those in a single atrium.

Under normal conditions, pressures in the atria are low throughout the cardiac cycle but the pressure in the left atrium is slightly higher than in the right; thus, in the presence of an interatrial communication there exists a slight left-to-right pressure gradient. Another factor that contributes to the flow of blood from the left atrium to the right one is the resistance to diastolic filling, which is greater in the left ventricle than the right. The basic dynamic alteration in blood flow in cases of defects of atrial septum is thus a left-to-right shunt through the defect. In moderate and large-sized defects, the shunts reach considerable magnitude, so that the flow through the pulmonary circuit is considerably increased, while the flow through the greater circulation is decreased. Observations made in cases of atrial septal defects have suggested some exceedingly large pulmonary flows, several hundred per cent above normal. Since the resistance to flow through the pulmonary circulation is very low and adaptable, this large flow may be accommodated with little or no increase in pulmonary arterial pressure. Inasmuch as pulmonary arterial pressure depends not only on the peripheral resistance in the pulmonary circuit but also on the magnitude of flow, moderate pulmonary hypertension may appear in cases of elevated pulmonary flow without materially altering the pulmonary arteriolar resistance. Occasionally, however, true pulmonary hypertension is found in conjunction with atrial septal defect as evidenced by marked elevation of the resistance. Such an elevation of pulmonary arteriolar resistance is usually considered a complication rather than a direct effect of the large pulmonary flow.

In the majority of cases the flow through the interatrial defect is unidirectional, so that blood from the pulmonary vein that is fully oxygenated flows into the right atrium and elevates the oxygen saturation of the mixed blood that perfuses the right heart and the pulmonary circulation, while the blood in the systemic arteries remains fully saturated. Occasionally anoxemia of the blood of the systemic arteries is found, and in about 8% of the patients it is severe enough to cause chronic cyanosis. Such a reversal of the shunt through the interatrial defect can be caused by a number of circumstances; for example, increased resistance to diastolic filling in the right ventricle immediately reverses interatrial shunt. This is best shown experimentally and clinically in cases in which an atrial septal defect coexists with pulmonary stenosis. When the atrial septal defect is the only malformation, reversal of flow may occur with the development of pulmonary hypertension. In cases in which the defect is so large that a virtual three-chambered heart exists, free mixing may take place without basic alteration of dynamics. Thus, pulmonary blood flow may be very large and systemic flow small, since the bulk of the flow through the defect is from left to right; yet enough contamination of blood entering the left atrium of the heart with caval blood takes place that anoxemia and even frank cyanosis exist. Finally, it has been speculated that in cases in which anoxemia is present but in which neither pulmonary hypertension nor a very large defect is found, a fetal-like jet of inferior caval blood thrown across the interatrial foramen during some part of the cardiac cycle may be the cause of cyanosis.[1]

While cardiac murmurs constitute a major aid in diagnosis of congenital heart disease, they are not helpful in the diagnosis of atrial septal defects. Loud systolic murmurs at the middle and lower left sternal border are frequently encountered, but soft and nondescript precordial murmurs are also often found. Occasionally murmurs are absent. Apical diastolic mitral-like murmurs are also frequently noted while early diastolic basal murmurs are sometimes heard, possibly resulting from insufficiency of the pulmonic valve coincidental with dilatation of the pulmonary arterial root.

Most of the clinical features of atrial septal defects are the direct results of the dynamic alterations brought on by the defect. The decreased systemic flow found in larger atrial septal defects leads to two sequelae: (1) small size of the aorta and (2) retardation of bodily growth. Both of these features are fairly characteristic for this lesion, especially the roentgenographic evidence for a hypoplastic aorta.

The striking increase in pulmonary blood flow leads to two important consequences: (1) the dilatation and hypertrophy of the right ventricle and (2) the dilatation of pulmonary artery and branches frequently associated with exaggerated pulsations and with intense pulmonary congestion. As a result of these features one finds a hyperdynamic cardiac impulse, bulging of the right anterior hemithorax, and accentuated pulmonic second sound. The electrocardiogram reveals the characteristic incomplete or complete right bundle branch block or, occasionally, pattern of right ventricular hypertrophy. The roentgenogram shows enlargement of the right side of the heart with the typical dilatation of pulmonary arterial branches and pulmonary congestion.

The following summary exemplifies the findings in an average case of atrial septal defect. A 21-year-old man had few symptoms and only moderate limitation of activities. Physical examination revealed a moderately loud systolic murmur along the left sternal border and a loud pulmonic second sound. Chest roentgenograms showed moderate cardiac enlargement, dilatation of the pulmonary artery with large, pulsating branches, and increased vascularity of the lungs. The electrocardiogram showed an incomplete right bundle branch block. The patient's blood pressure was 105/70 mm. Hg.

1. Selzer, A., and Lewis, A. E.: The Occurrence of Chronic Cyanosis in Cases of Atrial Septal Defect, Am. J. M. Sc. **218**: 516 (Nov.) 1949.

The intracardiac pressures were: right ventricle, 28/6 mm. Hg; pulmonary artery, 23/10 mm. Hg; and right atrium, 3 mm. Hg. The oxygen contents of the blood samples were: superior vena cava, 158 cc. per liter; inferior vena cava, 161 cc. per liter; right atrium, right ventricle, and pulmonary artery, 187 to 192 cc. per liter; and femoral artery, 219 cc. per liter (94% saturation). The approximate volumes of the blood flows were: systemic, 4.1 liters per minute; pulmonary, 11.3 liters per minute; and left-to-right shunt, 7.2 liters per minute.

The above-described clinical features present a fairly characteristic picture so that the diagnosis of atrial septal defect can be suspected in the majority of cases on the basis of physical examination and electrocardiographic and roentgenographic study. Often, however, it is difficult to differentiate this lesion from ventricular septal defect, atypical ductus arteriosus, or acquired pulmonary hypertension. In such cases cardiac catheterization may help to establish the diagnosis. The diagnosis is established with certainty when the catheter enters the left atrium through the defect and a shunt is demonstrated. The mere demonstration of a left-to-right shunt by findings of highly oxygenated blood in the right atrium is considered only presumptive evidence for an atrial septal defect, because such a finding can also occur in an anomalous pulmonary venous return.

The prognosis of atrial of septal defect is variable. While smaller defects with milder degree of dynamic consequences may permit the subjects to enjoy freedom from symptoms for decades or are even consistent with longevity, larger defects are likely to lead to cardiac insufficiency in early or middle adult life.

The important complications of atrial septal defect are: pulmonary hypertension; anoxemia and cyanosis, frequently caused by the former; and mitral stenosis. All these complications are likely to exert an unfavorable influence upon the prognosis.

The combination of atrial septal defect and mitral stenosis is known as the Lutembacher syndrome. There is a considerable controversy as to the importance and frequency of this syndrome. In some series the occurrence of mitral stenosis in cases of atrial septal defect was found to be exceedingly common, since it was reported in more than half of the cases examined. On the other hand, Nadas and Alimurung [2] reported the incidence of mitral stenosis as only occurring in 6% of cases of atrial septal defect. While the reason for this inconsistency is not apparent, it is probable that mitral stenosis of sufficient severity to be of serious dynamic significance is uncommon, and that the clinical diagnosis of Lutembacher's syndrome based on the clinical features of atrial septal defect and the presence of an apical diastolic murmur is made much too frequently. In connection with the prognosis of atrial septal defect, it is noteworthy that the incidence of bacterial endocarditis is exceedingly low; this constitutes a striking contrast to most other forms of congenital cardiac disease.

DEFECT OF THE VENTRICULAR SEPTUM

In contrast to atrial septal defects, congenital interventricular communications show relatively little variation in size and are almost always located in the same area. Unlike atrial septal defects they appear oftener in combination with other congenital malformations than as isolated lesions. The ventricular septal defect is in essence a persistent interventricular foramen which is normally present in a stage of fetal life and the location of which is clearly visible in the normal human heart as the membranous septum. It has been shown [3] that at least 90% of the isolated ventricular septal defects and virtually all such defects occurring in combined malformations of the heart are located in the region of the membranous septum. The remaining ventricular septal defects are openings due to imperfection of the formation of the muscular septum, which may be located in various parts of the septum. Such defects are usually small and appear to play a minor part as a cause of circulatory disturbances. It is probable that because of their location within the contracting cardiac muscle such defects decrease in size or even close during systole, while during diastole there is no significant pressure difference between the ventricles. Thus, the ventricular septal defects of clinical importance are primarily those located in the membranous septum, and there is no proper reason for the frequent use of the adjective high in connection with them.

It should be pointed out that the upper portion of the ventricular septum has a spiral course whereby the aortic root may come in contact with both ventricular cavities and assume a physiologically overriding position when the upper part of the membranous septum is absent. Thus, Eisenmenger's complex consisting of a large ventricular septal defect and a dextroposition of the aortic root is morphologically identical with or very similar to the uncomplicated large ventricular septal defect, except for those instances with high degree of dextroposition of the aorta in which half or more of the aortic root is located over the right ventricle. Because of this difficulty in separating morphologically these two syndromes, it has been suggested by us [4] that a distinction be made between them on clinical grounds, based on the degree of anoxemia. This concept has been accepted by others, while some authors have completely abandoned the term Eisenmenger's complex.

The typical ventricular septal defect located at, or in front of, the membranous septum, varies in size from 0.2 to about 3 cm. in diameter. A large ventricular septal defect involves most of the area usually occupied by the membranous septum that is located immediately underneath the aortic valves and opens into the right ventricle in the region of the tricuspid valve. Such defects are sometimes crescent-shaped or triangular rather than the usual round or oval shape. For reasons to be discussed in detail we propose a division of such defects into "large" and "small," with the former measuring between 1.5 and 3 cm. in diameter and the latter smaller than 1.5 cm. It should be emphasized, however, that even the

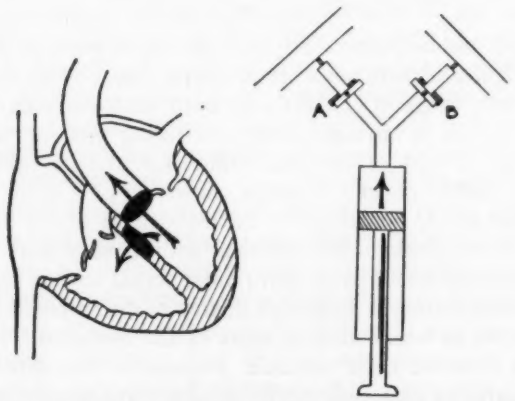
2. Nadas, A. S., and Alimurung, M. M.: Apical Diastolic Murmurs in Congenital Heart Disease: The Rarity of Lutembacher's Syndrome, Am. Heart J. **43**: 691 (May) 1952.

3. Selzer, A.: Defect of the Ventricular Septum: Summary of Twelve Cases and Review of Literature, Arch. Int. Med. **84**: 798 (Nov.) 1949.

4. Selzer, A., and Laqueur, G. L.: The Eisenmenger Complex and Its Relation to the Uncomplicated Defect of the Ventricular Septum: Review of Thirty-Five Autopsied Cases of Eisenmenger's Complex, Including Two New Cases, A. M. A. Arch. Int. Med. **87**: 218 (Feb.) 1951.

largest defects of the ventricular septum occupy only a small part of the septum, probably less than one-tenth of it, and, therefore, an almost complete partition between the two ventricles is always present. The complete absence of this partition (the trilocular heart with a single ventricle) bears no relationship to uncomplicated defect of the ventricular septum. It is caused by an entirely different process of maldevelopment and is usually associated with a rudimentary chamber and a narrowing of either of the two arterial trunks. Obviously, no transitional or intermediate forms between these two syndromes can occur. It has been noted that larger ventricular septal defects are often a part of a combined cardiac malformation while small defects are likely to appear as the sole cardiac malformation.

The atrial septum separates two low-pressure chambers with a very slight pressure differential between them while the interventricular septum separates a high-pressure chamber from a low-pressure chamber with a systolic pressure differential of over 100 mm. Hg. A communication between the ventricles, therefore, has a much more profound dynamic effect than one between the



Comparison of a heart with large ventricular defect and an air pump, showing how the left ventricle acts as a double-outlet pump.

atria. A ventricular septal defect creates a situation that is termed double-outlet ventricle [4] in which the left ventricle can pump the blood through two outlets. The figure presents this situation diagrammatically and also shows, for comparison, an ordinary air pump that has a bifurcated outlet. If the outlets are connected to two tires, the pump will inflate both tires to an equal extent when clamps *A* and *B* are fully open or are constricted to equal extent. If, however, clamp *A* is constricted more so that it offers twice as much resistance to air flow as clamp *B*, twice as much air is directed to tire *B* as tire *A*. The air flow then can be regulated to each side, since it stands in inverse proportion to the respective resistances offered by the clamps. This double-outlet pump creates a situation similar to the one existing in the left ventricle in the presence of a ventricular septal defect. The right ventricle with pressure only one-fifth as high as the left provides an outlet of low resistance, while the aortic orifice provides an outlet of high resistance. Thus, if a large ventricular septal defect were suddenly created in the normal heart, most of the blood, probably four-fifths of the output, would enter the right ventricle, and only the small remainder would enter the aorta. Such an occurrence can be prevented by one of two factors: (1) the small size of the opening, which would limit the flow through the defect, or (2) an elevation of pressure (i. e., resistance) within the right ventricle.

The question of the relationship of the size of the opening to the flow through it cannot be answered authoritatively, because physiological studies with autopsy correlation of such cases are not available. One can draw some tentative conclusions, however, from an analogy of this situation to that of constricted cardiac orifices. It is well known that a constriction of the aortic or pulmonary orifice has no significant dynamic effects until the opening is constricted to about one-half of its original size. At this point, the proximal pressure rises and the distal pressure falls, the differential between them pointing to a resistance to flow. On the basis of these observations, it seems reasonable to suppose that an interventricular defect smaller than one-half of the aortic orifice offers enough resistance to flow to maintain a pressure differential between the ventricles, whereby a normal or almost normal pressure relationship between them may be preserved. Since in the adult human heart the average diameter of the aortic orifice measures between 2.5 and 3 cm., it can be assumed that ventricular septal defects smaller than 1.5 cm. in diameter are likely to be consistent with the maintenance of an adequate systemic blood flow without disrupting the basic pressure relationship in the cardiac chambers.

Defects larger than 1.5 cm. in diameter are apt to be associated with elevated pressure within the right ventricle, for if adequate systemic circulation is to be maintained, the resistance in the right side of the heart must be elevated. This increased resistance can be brought about by a lesion within the right ventricle, such as tight pulmonary stenosis; however, in uncomplicated ventricular septal defects, increased resistance in the right ventricle can be brought about only by high resistance in the pulmonary arterioles. This elevated resistance in the pulmonary arterioles can be shown by the equal pressure in both ventricles, a direct calculation of pulmonary arteriolar resistance by available formulas, and the finding of characteristic changes in the intima and media of the pulmonary arterioles. The cause of such an elevation of resistance within the pulmonary circuit is unknown, although it had been suggested that it is present since birth and is presumed to originate by some adaptive process during the neonatal period when a transition from fetal to postnatal circulation usually takes place.

In the presence of equal pressure within the ventricles, a left-to-right shunt may take place and the blood flows from the left to the right ventricle or a right-to-left shunt may occur and, because of the position of the defect, right ventricular blood is pumped directly into the aorta. The direction of the shunt primarily depends on the respective resistances within the periphery of the systemic and pulmonary circulations.

In the foregoing discussion it was emphasized that in smaller defects normal pressure relationship between the two ventricles may be maintained, whereas in larger ones the relationship is disturbed by the fact that right ventricular pressure must rise to the level of that within the left ventricle. This basic difference between the two

types of ventricular septal defects affects not only hemodynamics but also the clinical pattern and prognosis; therefore, it is suggested that these fundamental dynamic differences be taken into account in classifying ventricular septal defects. The following classification of ventricular septal defects is proposed.

Classification of Ventricular Septal Defects

1. Small defect permitting pressure differential between ventricles
   - *a.* with clinically insignificant shunt
   - *b.* with a large left-to-right shunt
2. Large defect with equalized pressure in the ventricles
   - *a.* with a predominant left-to-right shunt
   - *b.* with mixed shunt and arterial anoxemia (Eisenmenger's complex)

Small Defects.—Lesions with a small shunt are characterized by a very loud systolic murmur typically located at the lower left sternal border, virtually unassociated with any other cardiac abnormality. This loud murmur and thrill found in patients without cardiac enlargement and with no visible disturbance of cardiac function was noted about 75 years ago by Roger and frequently bears his name. In more modern terms one finds the exquisitely prominent Roger murmur in patients who have a normal cardiovascular shadow in the roentgenogram, a normal electrocardiogram, and no ill effects or undesirable sequelae of the defect with the sole exception of a relatively high susceptibility to bacterial endocarditis. In such cases even cardiac catheterization may not provide diagnostic clues, for shunts of less than 20% of the total cardiac output are ordinarily not recognizable by an increase in oxygen contents in the appropriate chamber, so that only occasionally can such a diagnosis be proved by a fortuitous passage of the catheter through the defect into the aorta. It is estimated that defects in this category are smaller than 0.5 cm. in diameter (in the adult heart).

A small ventricular septal defect with an insignificant shunt (class 1*a*) is exemplified by the following summary. A 19-year-old boy had no symptoms. On examination there was a loud systolic murmur and thrill at the lower left border of the sternum. Chest roentgenogram and electrocardiogram were normal. The patient's blood pressure was 120/75 mm. Hg. The intracardiac pressures were: right ventricle, 18/3 mm. Hg, and pulmonary artery, 17/7 mm. Hg. The oxygen contents of the blood samples were 139 to 144 cc. per liter in the superior vena cava, right atrium, lower part of the right ventricle, and pulmonary artery. One sample from the upper part of the right ventricle contained 151 cc. per liter. The blood of the femoral artery was 95% saturated. The cardiac output was 6.2 liters per minute. Thus, except for the murmur, all findings were in the limits of normal. Although cardiac catheterization was not diagnostic it was consistent with this diagnosis.

Small ventricular septal defects with a large shunt constitute a sizeable group of cases in which the interventricular communication is small enough to permit the maintenance of a pressure differential between ventricles and yet draws large quantities of blood into the lesser circulation. This syndrome is presumed to be caused by septal defects, 0.5 to 1.5 cm. in diameter. In view of the high pressure within the left ventricle during systole it is not surprising that this relatively small opening permits such a large left-to-right shunt. The clinical features of the defects that fall into this category are very similar to those of the atrial septal defect. With the essential physiological disturbance of a very large pulmonary blood flow and a small systemic flow, one finds on physical examination in addition to the characteristic murmur, an accentuated second pulmonic sound and the precordial heave characteristic of right ventricular hypertrophy. Electrocardiogram may show the pattern of right ventricular hypertrophy or a right-sided conduction defect although evidence of left ventricular hypertrophy may also be present. The roentgenogram shows enlargement of the right heart or of both ventricles, a hypoplastic aorta, the large plmonary artery with enlarged branches that frequently show exaggerated pulsations and the intense pulmonary vascularity of the lungs. It is seen that the only difference between the large atrial septal defect and the ventricular septal defect of this class is the frequent additional findings of left ventricular hypertrophy and dilatation in the latter cases. Its absence in atrial defects is readily understandable, since the large volume of blood that is pumped into the pulmonary circulation completely bypasses the left ventricle in the atrial septal defect. It should be noted that Wood [5] attaches considerable diagnostic significance to left ventricular hypertrophy in ventricular septal defects that he considers primarily left-sided cardiac lesions. This view, however, has not found wide confirmation, and, in our experience, while left ventricular enlargement may also be present, right ventricular enlargement is the rule.

Cardiac catheterization of patients with defects in this group reveals higher oxygen contents of samples from the upper right ventricle and pulmonary artery than those from the atrium. Occasionally, however, even cardiac catheterization may not dispel the difficulty in differentiating this form of ventricular septal defect from atrial septal defect, for poor mixing and laminated flow in the right heart may make it difficult to determine the point at which highly oxygenated blood enters the right heart. Pressure measurement in cases of this group show normal or moderately elevated systolic pressures in the right ventricle and the pulmonary artery. The calculation of left-to-right shunt through the ventricular septal defect frequently reveals flow as large as those found in the largest atrial septal defects.

An example of small ventricular septal defect with a large left-to-right shunt (class 1*b*) is presented in a case of an 8-year-old girl, who had no limitation of activities. Physical examination showed a loud systolic murmur and thrill at the left fourth costal cartilage. Chest roentgenogram showed severe cardiac enlargement with a very prominent pulmonary artery bulge, large pulmonary arterial branches and intense pulmonary congestion. The electrocardiogram showed a pattern of right ventricular hypertrophy. The patient's blood pressure was 95/60 mm. Hg. The intracardiac pressures were: right ventricle,

5. Wood, P.: Congenital Heart Disease: A Review of Its Clinical Aspects in the Light of Experience Gained by Means of Modern Techniques, Brit. M. J. 2: 639 (Sept. 16) 1950; 2: 693 (Sept. 23) 1950.

43/0 mm. Hg; pulmonary artery, 45/8 mm. Hg; and right atrium, 2 mm. Hg. The oxygen contents of the blood samples were: 113 to 117 cc. per liter in the inferior vena cava, superior vena cava, and right atrium and 145 to 153 cc. per liter in the right ventricle and pulmonary artery. The femoral artery was 93% saturated. The approximate volumes of the blood flow were: systemic, 2.25 liters per minute; pulmonary, 6.65 liters per minute; and left-to-right shunt, 4.4 liters per minute.

Large Defects.—As already pointed out, defects about 1.5 to 3 cm. in diameter present the dynamic problem of a double-outlet left ventricle and lead to severe pulmonary hypertension, which dominates the clinical picture. In such cases there may be either normal oxygen saturation of arterial blood or anoxemia. As pointed out above, it is believed that the aortic root in its normal position physiologically overrides a large ventricular septal defect, and, therefore, Eisenmenger's complex merges inconspicuously with the large ventricular septal defect, both morphologically and functionally. Since the actual position of the aortic root in large ventricular septal defects merely facilitates mixing and the entry of caval blood into the aorta but the direction and quantity of flow depend upon the respective resistances within the pulmonary and systemic circuits, the clinician cannot distinguish the anoxemic form of the ventricular septal defect from Eisenmenger's complex with a true anatomic dextroposition of the aorta. Only in rare cases in which severe cyanosis is present from birth, is one justified in suspecting a congenital extreme dextroposition of the aorta. The usual cases, in which there are milder degree of anoxemia and relatively late onset of cyanosis can be referred to as instances of Eisenmenger's complex, with the understanding that this term is used in a physiological sense rather than in a morphological one.

Thus, the two varieties of large ventricular septal defect, the plain and the anoxemic, show in most respects identical clinical features. A loud systolic murmur is present as in all ventricular septal defects. Early diastolic pulmonary murmurs are rather common. The signs of severe pulmonary hypertension include a very loud pulmonic second sound that is palpable as a diastolic shock, diffuse precordial heave with anterior bulge of the left hemithorax, electrocardiographic evidence of severe right ventricular hypertrophy, roentgenographic evidence of right ventricular enlargement, and striking prominence of the pulmonary artery and its branches. The roentgenographic appearance of the dilatation of the pulmonary vessels associated with pulmonary hypertension is similar to the one reported previously in connection with large pulmonary flow. Frequently, however, a differentiation between the two can be made on inspection of the plain film, because, in hypertension of the pulmonary circuit, dilatation extends only into medium-sized pulmonary branches and often ends abruptly and leaves the periphery of the lung fields radiolucent, with little vascularity. On the other hand, dilated pulmonary arterial branches due to a large pulmonary flow extend into the smallest branches so that the entire lung field is intensely congested.

The large ventricular septal defect with a predominant left-to-right shunt (class 2*a*) is exemplified by the case of a 20-year-old girl with only slight limitation of activities. Physical examination revealed a moderately loud systolic murmur along the left border of the sternum and a very loud pulmonic second sound. Chest roentgenogram showed slight cardiac enlargement with a very prominent pulmonary artery shadow, large pulmonary artery branches but no increased pulmonary vascularity in the periphery. The electrocardiogram showed a pattern of severe right ventricle hypertrophy. The patient's blood pressure was 107/61 mm. Hg. The intracardiac pressures were: right ventricle, 103/7 mm. Hg; pulmonary artery, 103/62 mm. Hg; and right atrium, 3 mm. Hg. The oxygen contents of the blood samples were 137 to 143 cc. per liter in the inferior vena cava, superior vena cava, right atrium, and the lower part of the right ventricle, 154 to 159 cc. per liter in the upper part of the right ventricle and the pulmonary artery, and 186 cc. per liter (91% saturation) in the femoral artery. The approximate volumes of the blood flows were: systemic, 4.3 liters per minute; pulmonary, 5.4 liters per minute; left-to-right shunt, 1.8 liters per minute; and right-to-left shunt, 0.7 liter per minute.

The anoxemic form of a large ventricular septal defect (class 2*b*) presents an identical clinical picture, but, in addition, lowered arterial oxygen saturation, visible cyanosis, clubbing of digits, and polycythemia are present. In this group of defects, cardiac catheterization shows the characteristic equalization of systolic pressure within both ventricles and both arterial trunks. The higher oxygen contents of right ventricular blood samples usually demonstrate the defect; however, calculations of the shunt point to the fact that it is usually much smaller than the defects of group 1*b* and the pulmonary flow is either normal or slightly elevated, and may even be decreased. The oxygen saturation of the systemic arterial blood determines whether a given case belongs in category *a* or *b*. Since arterial saturation is sometimes normal at rest but abnormally low on exercise, it may be difficult at times to classify borderline cases.

Diagnosis in typical cases can usually be suspected on clinical grounds; however, diagnostic difficulties occasionally have to be clarified by the uses of special techniques. A small ventricular septal defect with an insignificant shunt is frequently confused with a milder degree of "pure" pulmonary stenosis. Small defects with large flows resemble atrial septal defects and usually have to be differentiated by means of cardiac catheterization. Large ventricular septal defects have to be differentiated with all other conditions associated with pulmonary hypertension. The one finding that is highly suggestive of a large ventricular septal defect is an equal systolic pressure in the right ventricle and the aorta or a systemic artery.

The prognosis of the ventricular septal defect depends mostly on the degree of hemodynamic disturbances caused by it. Thus, in small ventricular septal defects with insignificant shunts the prognosis is excellent, and the life expectancy would be normal if it were not for the susceptibility to bacterial infection of the defect. Other forms of the ventricular septal defect have a prognosis related to the degree of hemodynamic changes. In the majority of cases, cardiac insufficiency develops within the early and middle adult life.

The most important complication of the ventricular septal defect is subacute bacterial endocarditis. The high susceptibility to bacterial infection is indicated by the fact that it is developed in 25% or more of the cases. Other complications found in large ventricular defect include severe pulmonary arteriolar changes resembling those found in systemic arterioles in malignant hypertension. In such cases pulmonary hemorrhages are common and may assume alarming proportions.

INDICATIONS FOR SURGICAL INTERVENTION

It has been emphasized throughout the discussion that the term septal defect applies to a series of syndromes with a great span and variation of the degrees of hemodynamic changes, of cardiac difficulties, and of prognosis; therefore, the urgency and need for a surgical correction of the defects does not appear to be the same in the various syndromes. It appears to us that surgical correction would be most helpful in those cases in which the entire disability is caused by a large left-to-right shunt and no complicating and secondary factors are present. This would include the larger atrial septal defects without pulmonary hypertension and the small ventricular septal defect with a large shunt (class 1*b*). In such cases a successful closure of the septal defect constitutes as complete a cure of the condition as the ligation of a ductus arteriosus.

The small ventricular septal defect with an insignificant shunt (class 1*a*) produces no important cardiac changes and little prospect of cardiac disability. In this syndrome, surgical intervention will be justified only if and when the safety of the operation is so high that the mortality figures fall below the rather slim probability of death from therapy-resistant bacterial endocarditis.

The decision of surgical intervention in cases of large ventricular septal defect and in atrial septal defects complicated by severe pulmonary hypertension presents considerable difficulty. While the ventricular septal defect initiated the severe pulmonary arteriolar changes in the first case and the atrial septal defect may have contributed to them in the second instance, such changes are not likely to be reversible. The question of whether surgical intervention should be considered at all seems to depend on the dynamics of the lesion, namely, the direction of the predominant blood shunt. If the predominant flow through the defect is from left to right, surgical closure of the defect may be contemplated with the understanding, however, that a major disability resulting from pulmonary hypertension is likely to persist. On the other hand, in cases in which a predominant right-to-left flow indicates that the resistance in the pulmonary circuit is higher than in the systemic circuit, closure of the defect appears to be contraindicated, since the defect constitutes an escape valve without which the pulmonary arterial pressure would be still higher.

SUMMARY AND CONCLUSIONS

Defects of the cardiac septums appear clinically as a number of well-defined syndromes that can be identified on clinical grounds or with the aid of cardiac catheterization. They represent a wide spectrum of changes in the circulatory system, from a trivial shunt, not materially affecting the circulation, to a most serious and disabling cardiac lesion. Atrial septal defect affects the circulation primarily by a large left-to-right shunt leading to a striking increase of pulmonary blood flow, a dilatation of pulmonary blood vessels and hypertrophy and strain of the right heart. Pulmonary hypertension is found in some cases, but is considered a late complication rather than a direct effect of the defect. Occasionally the flow through the defect reverses the usual direction leading to anoxemia and chronic cyanosis.

Ventricular septal defects fall into two categories: small defects in which pressure differential between the two ventricles is maintained and larger ones in which the pressure in the two ventricles is identical. Smaller defects may have a clinically insignificant flow through them, in which case no important cardiac manifestations, other than the characteristic murmur, are present. In some cases, however, a large left-to-right shunt increases the pulmonary blood flow to such proportions that changes that are almost indistinguishable from atrial septal defect appear in the pulmonary circulation and the right side of the heart. The dynamic situation of a double-outlet left ventricle is present with the large ventricular septal defect, and severe pulmonary hypertension exists in the patient from the time of childhood, since the pulmonary arteriolar resistance is necessary for the maintenance of an adequate systemic blood flow. In such cases pulmonary hypertension dominates the clinical picture and its degree determines whether the flow is primarily from left to right or from right to left. In the case of a reversed flow, anoxemia and cyanosis appear, and such cases are in the category of the Eisenmenger complex. It is concluded that cases primarily suited to a surgical attempt to repair the septum are those in which a left-to-right shunt, large pulmonary flow, and little changes in intracardiac pressures are found.

Bence Jones Protein.—H. Bence Jones in 1847 presented a paper before the Royal Society in London which begins as follows: "On the first of November 1845 I received from Dr. Watson the following note, with a test tube containing a thick, yellow, semi-solid substance:—'The tube contains urine of very high specific gravity; when boiled it becomes highly opake; on the addition of nitric acid it effervesces, assumes a reddish hue, becomes quite clear, but, as it cools, assumes the consistence and appearance which you see: heat reliquefies it. What is it?' " . . . It is obvious, 100 years later, that Bence Jones never completely answered Watson's question. . . . The source of Bence Jones proteins has not been definitely established. Certainly the overwhelming chance is that a patient with Bence Jones proteinuria is a victim of multiple myeloma. For this reason many investigators have conjectured that the proteins are metabolites of the tumor cells. Other investigators have expressed the belief that the proteins result either from partial breakdown of a normal protein of higher molecular weight, or from some hindrance to the complete synthesis of such a protein. In the presence of Bence Jones proteinuria, similar proteins should be present in the serum, since in the absence of any indication of a renal origin, the proteins must be transported by the blood from the source of origin to the kidney. Ellinger was the first investigator to demonstrate qualitatively the presence of these proteins in the blood; he also detected them in ascitic fluid.—W. J. Martin, M.D., and D. R. Mathieson, M.D., Pyroglobulinemia (Heat-Coagulable Globulin in the Blood), *Proceedings of the Staff Meetings of the Mayo Clinic*, Oct. 7, 1953.

PATENT DUCTUS ARTERIOSUS AND VASCULAR RINGS

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A patent ductus arteriosus is a functioning vascular connection between the aorta and the pulmonary artery. Through this channel passes a volume of blood, its magnitude determined by the size of the ductus and the pressure differential between the two vessels. In uncomplicated cases the flow is from aorta to pulmonary artery and not vice versa; therefore, the patient is not cyanotic. It has been shown that as much as several liters of oxygenated blood per minute leak from the peripheral to the pulmonary circulation.[1] This implies that a volume of blood far larger than normal is flowing through the pulmonary arteries, pulmonary capillaries, and pulmonary veins and through the left auricle, the left ventricle, and the proximal portion of the aorta. The systemic flow may be reduced to below the normal level or may be maintained by a sufficient increase in the output of the left ventricle.

DISADVANTAGES OF PATENT DUCTUS

The occurrence of the patent ductus arteriosus and this aorta-pulmonary-artery shunt is associated with the following disadvantages. 1. There may be interference with growth, presumably because of reduction in systemic blood flow. This limitation of growth occurs in a significant number of children with patent ductus but not in all. Porter [2] studied a pair of identical twins, one of whom had patent ductus arteriosus. Before operation, the affected twin was shorter by 3.7 cm. In three years after operation, he more than made up the difference. 2. There may be infection of the abnormal vessel, subacute bacterial endarteritis. This was one of the chief causes of death in the preantibiotic era. It is still a significant hazard. 3. Congestive heart failure may occur, presumably related to the increase in the work of the left ventricle. Such failure is another major cause of disability and death. It occurs rarely in the young. It is progressively frequent with advancing age. 4. Pulmonary vascular disease may develop, with progressive increase in pulmonary artery and right ventricular pressures. Reversal of the pressure gradient may lead to forcible entry of pulmonary artery blood into the aorta. Changes in pulmonary function may take place, and eventually there may be failure of the right ventricle. 5. In rare instances, a greatly dilated pulmonary artery may rupture.

In spite of these disagreeable possibilities many children with obvious patent ductus arteriosus appear well and vigorous; they keep up with their contemporaries; and it is difficult to think of them as potential invalids. The disadvantages mentioned, nevertheless, are real, although their manifestations may be long postponed. In 1943 Shapiro and Keys [3] analyzed all cases of patent ductus arteriosus that were reported with postmortem confirmation. This classic article established a basis for thinking about the prognosis of patent ductus arteriosus. These authors stated that 80% of the patients eventually succumbed to the congenital lesion and that those alive at the age of 17 died at an average age of 35. This is a reduction in life expectancy of at least 25 years. Patent ductus arteriosus, then, is not to be described as a harmless or well-borne lesion. It is a time bomb with a long fuse, but still a bomb.

INDICATIONS FOR OPERATION

Since the epoch-making paper in 1939 by Gross and Hubbard,[4] patent ductus arteriosus, if uncomplicated and if found early in life, has been a curable lesion. The mechanical abnormality can be abolished by skillful surgery. As of April, 1952, Gross [5] had operated on 525 such patients; he had operated on 482 of these by the method of complete division. In this group of 482, the over-all mortality rate was 2%. In the large group without significant symptoms, the mortality was less than 0.5%. There were no recurrences. It is hardly appropriate for me, as a medical man, to judge the type of operative procedure, in this case a choice between division of the ductus and ligation. Abolition of the functioning connection is what is sought, with minimum risk and with minimum incidence of recurrence. Gross' results by the method of complete division have been mentioned. Scott [6] operated on 161 patients by a suture-ligation technique and reported only two deaths and no recurrences in this group.

The concern today is primarily with the indications for operation and the diagnostic selection of patients. The evidence now available indicates that (1) patent ductus arteriosus is a potentially disabling lesion and leads to premature death, (2) it is curable by operation, and (3) the mortality rate of the operation in good hands is low. In my opinion, therefore, the presence of uncomplicated patent ductus arteriosus in a young person is an indication for operation before the development of complications and even in the absence of symptoms and disability. One further proviso for the application of this rule is a surgeon with adequate training and experience with this type of vascular anomaly. The operation should be done at the time for maximum success and minimum

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Read in the Symposium on the Indications and Results of Surgical Treatment of Heart Disease before the joint meeting of the Section on Experimental Medicine and Therapeutics and the Section on Internal Medicine at the 102nd Annual Meeting of the American Medical Association, New York, June 4, 1953.

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2. Porter, W. B.: The Effect of Patent Ductus Arteriosus on Body Growth, Am. J. M. Sc. **213**: 178, 1947.

3. Shapiro, M. J., and Keys, A.: The Prognosis of Untreated Patent Ductus Arteriosus and the Results of Surgical Intervention: A Clinical Series of 50 Cases and an Analysis of 139 Operations, Am. J. M. Sc. **206**: 174, 1943.

4. Gross, R. E., and Hubbard, J. P.: Surgical Ligation of a Patent Ductus Arteriosus: Report of First Successful Case, J. A. M. A. **112**: 729 (Feb. 25) 1939.

5. Gross, R. E.: The Patent Ductus Arteriosus: Observations on Diagnosis and Therapy in 525 Surgically Treated Cases, Am. J. Med. **12**: 472, 1952.

6. Scott, H. W., Jr.: Closure of the Patent Ductus by Suture-Ligation Technique, Surg., Gynec. & Obst. **90**: 91, 1950.

risk, which for most patients means before puberty when the vessels are easier to handle and the ductus has not yet begun to grow shorter.

If these principles are accepted, the diagnosis is a vital matter. Curable disorders should not be underdiagnosed. The diagnosis will usually be made on the basis of the characteristic continuous murmur. This murmur is usually loud, exhibits a systolic accentuation, is loudest in the second or third left intercostal space, and is often widely transmitted. It is not a two phase, "to-and-fro" murmur but a one phase murmur that is going through the second sound but is not affected by it. As emphasized by Levine and Geremia [7] the systolic component is usually louder than the diastolic. Roentgenograms and electrocardiograms are useful chiefly in suggesting the possible presence of additional lesions. The systolic blood pressure is usually normal, but the diastolic is often somewhat lower than the usual range. About half of the patients exhibit a thrill. Intracardiac catheterization is not necessary for the diagnosis save in a few special situations.

A few patients with patent ductus arteriosus exhibit only a systolic murmur. Three such patients were carefully studied by Myers and his colleagues.[8] They found in each an elevated diastolic pressure in the pulmonary artery, approaching the systemic pressure. Such pressure would obviously minimize flow through the abnormal vessel during diastole and, therefore, influence the character of the murmur. Such patients exist, and the physician wishes to recognize them. Cardiac catheterization on these patients may produce diagnostic evidence and should be used on properly selected patients. This is not to say that a systolic murmur at the base, even a loud one, is in itself an indication for catheterization. The great majority of such murmurs are not associated with any form of heart disease. Only when such a murmur is observed in a child who is ill and who has, in addition to the murmur, more specific evidence of heart disease, such as enlargement, electrocardiogram abnormality, and congestion, is such a potentially traumatic procedure as catheterization to be considered as justified. It is an unnecessary reminder that, in the selection of patients with patent ductus arteriosus for operative treatment, care must be taken to eliminate those patients in whom the patent ductus is acting as a compensatory mechanism. Most such patients are cyanotic.

Pulmonic stenosis as the sole complication of patent ductus arteriosus is not a contraindication to closure or section of the ductus; an intraventricular or intra-atrial septal defect as the sole complication is not a contraindication; and the combination of pulmonic stenosis and a septal defect is usually a contraindication. It is precisely in this situation of a right-to-left shunt and a diminished pulmonary artery flow that a patent ductus arteriosus may be a useful compensatory mechanism.

The age of the patient is a factor in the choice of when to operate. Operations may be done on small babies if there are special reasons, but it is seldom necessary to hurry and (according to Gross [5]) the optimum age runs from 3 or 4 years up to 15 or 20, with the best chance for a smooth procedure between 6 and 12. Patients have been operated on with success even in the fifth or sixth decade, but here the vessels are more difficult to work with and the passage of years may have led to a shortening of the ductus. These facts influence the advice one gives to patients in the fourth or fifth decade who are found to have patent ductus arteriosus. Here general statements do not apply, and one must balance the considerable risks of operation against the need and the probability of improvement.

The results of surgery of the ductus in the young are good. Growth of the child proceeds at a normal rate; the liability to infection is greatly reduced; the cause of congestive heart failure is removed; and experience to date indicates that the tendency to develop pulmonary vascular disease is greatly diminished. Therefore, it is now generally agreed that uncomplicated patent ductus arteriosus in a young person is in itself an indication for operation.

VASCULAR RINGS

The situation is quite different in the case of vascular rings, by which is meant such abnormalities as double aortic arch, anomalous origin of the right subclavian artery, and right aortic arch. These exhibit an almost infinite variation. As emphasized by Schnitker [9] such anomalous structures often exist without producing disability. In this case they require no treatment. In other patients they do produce symptoms and disability, usually by compression of trachea, esophagus, or bronchus, and in these cases recognition and treatment may be vital. Attention is usually called to such lesions by symptoms deriving from trachea, bronchus, or esophagus. Dysphagia or malnourishment may occur in the patient with esophageal constriction. Abnormal breathing, chronic cough, or repeated attacks of respiratory infection may point to tracheal or bronchial compression. The possibility of such a lesion is suggested by these symptoms, and the diagnosis is made chiefly by x-ray examination, which, as Neuhauser [10] has pointed out, will be directed chiefly at visualizing the air and food passages and looking, from all directions, for evidence of their compression or distortion. It appears from the literature that x-ray examination of the trachea and esophagus is more informative than angiography (i. e., retrograde aortography). This is reasonable, since it is the effect on the trachea and esophagus and not the existence of a vascular abnormality that gives rise to disability.

These vascular abnormalities may also assume importance through wrong diagnosis. As pointed out by Roche, Steinberg, and Robb,[11] a right-sided aortic arch may be interpreted as tumor or aneurysm, ineffective or injurious treatment may be applied, and valuable time may be lost.

With regard to the treatment of patients with vascular rings, no such broad generalization can be made as was

7. Levine, S. A., and Geremia, A. E.: Clinical Features of Patent Ductus Arteriosus with Special Reference to Cardiac Murmurs, Am. J. M. Sc. **213**: 385, 1947.

8. Myers, G. S., and others: Atypical Patent Ductus Arteriosus with Absence of the Usual Aortic-Pulmonary Pressure Gradient and of the Characteristic Murmur, Am. Heart J. **41**: 819, 1951.

9. Schnitker, M. A.: Congenital Anomalies of the Heart and Great Vessels, New York, Oxford University Press, 1952.

10. Neuhauser, E. B. D.: Roentgen Diagnosis of Double Aortic Arch and Other Anomalies of Great Vessels, Am. J. Roentgenol. **56**: 1, 1946.

11. Roche, U. J.; Steinberg, I., and Robb, G. P.: Right-Sided Aorta with Descending Aorta Simulating Aneurysm, Arch. Int. Med. **67**: 995 (May) 1941.

possible in the case of patent ductus arteriosus. Each case must be studied and treated in a highly individualized way. The important thing is that compression of trachea or esophagus by such vascular anomalies may sometimes be relieved by skillful surgery. The object of the operation is not a change in circulatory function but the release of trachea or esophagus from compression. The indications for operation are the symptoms and the identification of a vascular lesion such that the compression or deformity can be relieved without too great an impairment of the flow and distribution of blood.

SUMMARY AND CONCLUSIONS

The advance of surgical and diagnostic techniques makes it possible definitely to help the patients with patent ductus arteriosus or vascular rings. In the case of patent ductus arteriosus, operation should be thought of as essentially curative and should be used widely to prevent the development of complications. In the case of vascular rings, operation should be reserved for those who have a remediable anomaly producing disabling or threatening symptoms.

25 Shattuck St.

PROCTOLOGIC HELP FOR THE GENERAL PRACTITIONER AND THE DIAGNOSTICIAN

CHAIRMAN'S ADDRESS

Louis E. Moon, M.D., Omaha

In this paper I am speaking not as a surgical specialist whose attention and interests are focused solely on the eradication of lesions at the outlet of the digestive tract but as a physician whose concern it is to see more sick persons restored to health. On the basis of my own experience, I believe that I can point out how the special knowledge and skills of the proctologist, or, if another name is preferred, the specialist in the diagnosis and treatment of anorectal and colon diseases, might be used to better advantage by internists, including gastroenterologists, cardiologists, and others, and by general practitioners, in promoting the common aim of all of us, that is, the improvement of medical care.

Those of us who practice a medical or surgical specialty may tend to exaggerate the importance of the lesions and conditions with which we constantly deal and to minimize the significance of those in other areas of the body. Nevertheless, as physicians we must remember that, whatever the region of our special interest, it constitutes only a part that is by no means a separate entity but is intimately united structurally and integrated functionally with every other part of the whole organism. Furthermore, we can never forget that the patients we treat are not merely bodies with disease but living human beings with individual and various emotional temperaments and minds and that they react to and are affected by pain and other symptoms in very different ways. If we deserve to be called physicians and not mere technicians, we will consider this interdependence of mind and body in interpreting the significance of any lesion anywhere in the body or the symptoms arising from it. Those of us whose special concern is disease of the digestive tract, whether we are gastroenterologists or proctologists, should not overlook the fact that all are dealing with the same alimentary canal. A good gastroenterologist must be able to recognize the presence of functional or structural abnormalities and of disease in the anus, rectum, and colon, and to recognize their relationship to disease or symptoms referable to the upper gastrointestinal tract. Likewise, the skilled proctologist must recognize and evaluate anorectal signs and symptoms related to disease from above.

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AREAS OF COLLABORATION

In the past, talks by specialists in anorectal disease have often emphasized the importance of the proctoscopic examination in the diagnosis of lesions of the lower intestinal tract, and these exhortations apparently have been heeded. I am confident that the necessity for proctoscopic study in suspected cases of polyposis, carcinoma, and other diseases of the rectum, sigmoid, and colon is now generally recognized and accepted among internists, abdominal surgeons, and general practitioners. I wish here to emphasize a different role in which those of our specialty may be of help to other physicians and surgeons, that is, the contribution we might make in the interpretation of abnormalities of the lower intestine and anus in evaluating the significance of these findings in relation to remote symptoms in the gastrointestinal tract or elsewhere and in pointing out how these can best be treated. Often the proctologist is able to suggest corrective medical measures as ancillary treatment, and his function should not be limited to the performance of surgical procedures on the anus and rectum.

In thinking of my own experience in pursuance of this theme, so many examples came to mind that I realized it would be difficult to list and discuss them all. Among the conditions I might have mentioned, in which the collaboration of the internist and the anorectal specialist might be productive of better care for the patient, are melena or massive hemorrhage from the gastrointestinal tract; ulcerative colitis; regional ileitis; amebiasis; diverticulosis and diverticulitis, especially in the differentiation of the latter from carcinoma; and numerous other conditions. Instead of presenting a review of the many possibilities for collaboration between the internist and the proctologist and of enumerating all the situations in which proctologic help might be extremely valuable, I have

chosen rather to confine my remarks to some of the factors concerned in partial obstruction of the anal outlet and to call attention to various ways in which this abnormality may influence the general clinical picture.

Before I do this, I want to relate a patient's experience while undergoing clinical investigation and treatment in a teaching hospital. The internist in charge of the medical service was the head of the department, and three of his four assistants who accompanied him on his rounds were exceedingly articulate and impressive, besides being tall and handsome. The fifth doctor, who always brought up the rear of the retinue, was of very small stature, with exceedingly myopic eyes requiring very thick lenses, and, furthermore, he could not speak without lisping. While the other assistants were competing to impress their chief with their clinical acumen by asking profound and searching questions and also were demonstrating their superior wit and humor in scintillating repartee, the little fellow never had a chance to open his mouth. Nevertheless, always, just as they were going out the door and the others were already conducting a learned symposium about the patient in the next room, he would turn around and ask plaintively, "Did your bowelth move?" A question, by the way, the others never thought to ask. This patient says that this happened every single day, without fail, and her most vivid and durable memory of her two-month sojourn in the hospital is that little doctor, with his last and only word, "Did your bowelth move?"

I am sure that some of our medical colleagues in other specialties would accuse those of us interested in anorectal disease of being of like single-track mind, since we so consistently and persistently ask the same question about any patients they may discuss with us or refer to us. If they are sometimes amused or annoyed (depending on the circumstances) by our habitual use of this prosaic, but very pertinent question, there are occasions, also, when we might have similar reactions to their answer to it. I recall, for example, that several years ago a certain neurologist called me in regard to a patient under his care. I asked the usual question, of course, "Does she have any difficulty with elimination?" His answer was: "No, she doesn't have any trouble. She takes two compound cathartic pills each night and an ounce of mineral oil four times a day and an enema, if necessary, so she doesn't have any difficulty with her bowels." I could cite comparable statements that have been made to me by general practitioners and internists, too.

There are numerous causes for poor elimination of fecal material from the intestinal tract. Some of the causes have to do with nutrition, general metabolic disturbances, and lesions of the upper portion of the digestive tube. In the present discussion, I am not concerned with these, for I do not wish to talk about constipation, but rather about the symptoms, both local and remote, that may result from the partial obstruction caused by an inadequate anal outlet. And what I want to emphasize particularly is that collaboration between and among the various medical specialists would be helpful in rendering relief to many patients with anal contracture in whom the presence of this abnormality is ignored or its significance improperly interpreted.

IMPORTANCE OF SYMPTOMS

It appears that, generally speaking, the internist and general practitioner do not attach sufficient significance to anorectal disease, more particularly, to partially obstructing lesions. In many instances, an anal lesion goes unrecognized, because the symptoms have been attributed to other causes and the anal outlet was not examined. In others, though the presence of an anal or anorectal lesion is noted, it may appear so trivial that it is not suspected of producing a train of severe symptoms for which other cause is being sought. Any diagnostician or medical practitioner should be able to ascertain whether there is anal disease, provided he takes the trouble to look in the right place. When such a lesion is recognized, then its significance must be evaluated, and it is here that the proctologist can be of service in relating the importance of the anal difficulty to the general clinical situation.

The anal lesions most frequently observed are anal fissure with muscle spasm; pectenosis, which is an inflammatory condition in the anal canal, producing anal contracture; postoperative scar tissue; congenitally small anal canals; internal hemorrhoids obstructing the anal opening; cryptitis; and papillitis. The most frequent complaint of patients with these anal lesions is the inability to empty the bowel. The typical story is that there is a desire to go to stool, but, in the attempt to pass it, the stool apparently comes to a certain point within the rectum and then cannot be expelled. The patient often says that he has a stricture there. Another typical and frequent complaint is that a small amount of stool is expelled, but the bowel does not empty completely, and that an enema often or usually is necessary to produce complete evacuation. When a formed stool is passed, there is usually pain described as a tearing or splitting, accompanied by bleeding and followed by an aching or severe burning or throbbing that may last from one or two hours or up to the time of passage of the next stool. These patients often complain also of the sensation of sitting on a hard lump or ball, which will not pass through the anal outlet. They probably are sitting on a lump, because an anal contracture is the most frequent cause of fecal impactions.

The textbooks have taught that pencil-like stools are an indication of constriction of the anal outlet; this is true, but this type of constriction usually is due to muscle spasm without anal disease. Anal contractures and stenoses that are caused by inflammatory disease or scarring usually give rise to liquid or watery stools, often with incontinence, since formed stools will not pass. The presence of frequent liquid stools usually implies that the bowel is not emptying properly or that some irritative substance is present and should be removed. In such instances, the intestinal tract should be cleansed thoroughly by some method that will not increase the irritation, preferably by irrigation with a isotonic sodium chloride solution enema. Too often, however, in applying symptomatic treatment, the physician prescribes bismuth and paregoric mixtures or other astringents, which only serve to intensify the difficulty. Another mistake that is made much too frequently in these cases of contracture of the anal orifice is to give barium by mouth

or as an enema for roentgenographic examinations, without having made a digital examination of the anus and rectum. This often makes a bad situation worse, and the patient is placed in serious difficulty in attempting to eliminate the barium. Impactions are frequent in such instances, and complete obstruction may occur if there is a constrictive lesion higher in the intestines. Too often, on hearing complaints about difficulty with elimination, the physician thinks it is just another case of constipation and prescribes a change in diet, artificial bulk, mineral oil, cathartics, or enemas, without examining the anal canal. These measures may help the patient with a partial obstruction in forcing some stool through the pencil-like opening, but the evacuation will not be complete. The use of artificial bulk in these cases is definitely contraindicated.

When an anal contracture is neglected, either because the patient does not seek medical attention or because his physician fails to recognize its presence or significance, the local stenosis becomes tighter and numerous remote symptoms supervene. The situation becomes critical when the impaction produces a complete intestinal obstruction. When this occurs, the proctologist frequently is called in to make a proctoscopic examination, which is impossible because the bowel is not empty. The history and a digital examination will tell the entire story. In most instances, the patient would have been saved much suffering if proctologic help had been sought earlier. If the mechanical cause were recognized in many of these cases of so-called constipation, many fissures, chronic ulcers, abscesses, and fistulas could be prevented, as well as the aggravation or production of serious remote symptoms.

RELATED SYMPTOMS

The remote symptoms caused or aggravated by a constricting lesion of the anal orifice that results in partial obstruction are numerous. Those that I see oftenest are conditions that simulate appendicitis, although the appendix may have been removed, and cholecystitis, although the gallbladder may have been removed, and those that simulate anginal pain. I believe firmly that an anal contracture that prevents the expulsion of gas is a very definite factor in producing pain in the upper and lower right quadrants and in the upper and lower left quadrants of the abdomen. The presence of this pain often leads to abdominal operation that could have been avoided if an anorectal examination had been made and the findings properly evaluated. Furthermore, the presence of an obstructive lesion at the anus intensifies the symptoms and increases the hazards in patients with true appendicitis and cholecystitis and should definitely be dealt with as an integral part of the therapeutic management in such cases. Many of these patients are also obese, and I believe that the poor elimination and this difficulty in emptying the bowel properly are factors in their inability to control their weight.

This is not the time nor the place to introduce a discussion of the physiologic factors, but it might be recalled that the work of Alvarez and of Case has shown the effect of obstruction in disrupting the normal gradients of intestinal motility. Their findings make it justifiable to assume that, in the case of distal obstructive lesions, the exaggeration of the antiperistaltic movements in the colon leads to an enlargement of the right portion of the colon and that the retention of food residue will be prolonged in proportion to the degree of obstruction in the distal segment of the colon. This might well account for the gas pains and distention seen in connection with anal contracture.

I am constantly impressed by the number of patients being treated for cardiac disease who have anal abnormalities or disease that prevents proper elimination. Their physicians have told them that the heart condition would not permit them to have corrective surgery. Nevertheless, it seems evident that the poor elimination owing to a partial obstruction, with the distention and epigastric pressure thus caused, presents a far greater hazard, as far as the cardiac condition is concerned, at least in numerous instances, than an anorectal operation would. Anal contracture always implies straining at stool, and this creates intrathoracic pressure that puts a severe strain on a crippled heart. If it were possible to collect statistics on this, I believe it would be found that a relatively high proportion of severe and also fatal coronary attacks have occurred when the patients were at stool. It has also been found experimentally that packing of the rectum with absorbent cotton will elevate the blood pressure approximately 10 mm. Hg in the dog. The pressure is maintained until the material filling the rectum is removed. This finding suggests that distention of the colon may be a factor of serious import in a patient with cardiovascular disease. Yet, during the past few weeks, I have been called to see two different patients hospitalized because of acute coronary thrombosis. Both patients had been complaining of great pain at stool over a long period of time, and, in both instances, my examination revealed an anal opening that would not admit the little finger and an enormously distended abdomen. In these cases, the bowels had probably not emptied satisfactorily for weeks, and yet nothing had been done about it until the heart condition had reached a critical stage. At the time I saw these patients, the situation was too precarious to permit surgery. Besides the patients with true coronary disease who have anorectal difficulties, there is a large group of patients in whom the precordial and upper left quadrant distress is due to reflex pressure caused by a distended colon. I am quite sure of this, for I have seen a great many instances in which pseudoanginal symptoms cleared completely after the correction of an anal contracture.

Besides the symptoms referable to the upper gastrointestinal tract or cardiovascular system, there are many other remote sequelae of the partial obstruction caused by anorectal contracture. The headache, furred tongue, foul breath and malaise, often mentioned in the textbooks as accompaniments of obstipation, frequently clear completely when the difficulty is relieved, and I have seen instances of toxic optic neuritis, toxic labyrinthitis, paroxysmal tachycardia, and asthma completely relieved after the correction of an anal obstruction. I have also been called in consultation to see elderly patients in psychopathic wards who had anal contractures with impactions that obviously had been present for weeks. These patients cleared mentally after the impaction was removed and the obstruction corrected and remained well, with no further evidence of a psychosis.

INDICATIONS FOR SURGERY

To the consultant who sees patients who have been neglected until serious obstruction has developed, such a situation always seems deplorable and sometimes also inexcusable. Although in some instances the physician has been at fault in not recognizing the presence of anal disease or in not properly evaluating its seriousness, his failure often is an honest one, in that he is trying to protect his patient from needless surgery and he is not aware that the anal lesion may be intensifying the symptoms for which he is treating the patient or that it may even be causing them in some cases. From the proctologic standpoint, though, it is often true that, by the time the patient's physician recognizes that an anorectal operation should be performed, the constricting anal lesion may have masked the symptoms of a rectal carcinoma and it may be too late for corrective surgery to be successful.

Not all the delay that is characteristic of so many of these cases, however, can be blamed on the physicians who treat these patients, for the patients themselves display a great reluctance to submit to anorectal examinations, because of the fear of being hurt. In the management of many who have painful lesions, anesthesia has to be administered in order to carry out the proper examinations. It is my practice to anesthetize and examine the patient and then to perform the necessary surgery for the relief of the obstructing anal lesion, provided the examination does not show a lesion or tumor at the rectosigmoid or in the rectum. After such a procedure, a barium study of the colon should be made.

If the proctologist can be of assistance in evaluating the seriousness of anorectal lesions that should be eradicated, he can also be equally helpful in advising against operation when the nature of the lesion is such that surgical treatment is contraindicated. For example, no anorectal operation will cure either diarrhea or constipation that is being caused by dietary or metabolic disturbances or by lesions or functional abnormalities in the upper digestive tract. Another example is that of the elderly man who has prolapsing hemorrhoids and difficulty in voiding. The patient may think and even his doctor may think that the hemorrhoids should be removed, but the proctologic consultant knows that the prostatic obstruction and straining in voiding may be the cause of the hemorrhoidal prolapse. In cases of ulcerative colitis, the proctologist also often has to point out that an operation for fistula and hemorrhoids is contraindicated because of their tendency to recur. The refusal to perform operation in cases of this type, and suggestions as to effective medical measures rather than surgical treatment are useful functions that the specialist in the treatment of anorectal disease can perform in his collaboration with other medical practitioners. Advice of this type, in its proper place, is just as important as the recommendation and performance of surgical procedures in their place.

The discussion of the various types of surgical procedures has no point here, but I do want to mention that the purpose of all treatment is the restoration of function as well as eradication of the lesion that is causing constriction or obstruction. In any operation performed on the anus and rectum, the function of the anal outlet must be restored, and, to allow proper elimination, it must remain of adequate size. I say this because many of the anal contractures that I see have developed as the result of anorectal surgery. Every day I see patients who tell me that they had an operation and that they have no hemorrhoids but that they have had difficulty in emptying their bowels ever since. It is not good surgical practice to remove hemorrhoids or any other lesion and to leave the patient with a scarred anus that creates as much difficulty as the original trouble, and sometimes more.

NEED FOR INCREASED CONSULTATION

I hope that the foregoing somewhat random observations from my own experience have served to point up the fact that proctologic consultation might be useful and helpful to the internist and the general practitioner in the management of a large group of patients who are not now getting the best care that they might receive if closer collaboration were the rule rather than the exception. I have managed to convince a few internists that a constricted anus is a matter for thorough investigation by a proctologist, and I believe that numerous patients have been benefited and have avoided much suffering as the result of such cooperation.

I wish that as a result of my remarks here all of you who are treating patients who have the remote symptoms that have been described would make a systematic survey to see how many of them have difficulties of elimination that are due to mechanical obstruction at the anus. If my remarks could stimulate some investigation along this line, I am sure that the results for many of your patients and your own satisfaction in helping them would make such a study worth your while.

There are many difficulties, I know, in the way of routine referral of patients for special examinations of this type, but I believe it behooves us to devise some more effective facilities for such teamwork. Perhaps this could be done in our hospitals by establishing some sort of interconsulting service that would be available to patients without exorbitant expense. There should be some way in which gastroenterologists, proctologists, roentgenologists, and others could establish a consulting service for general practitioners in the management of patients with diseases of the digestive tract. If such consultation and facilities were available, then barium enemas would not be administered before at least a digital anorectal examination were made, just to cite one example of the type of service that might be rendered. If proctologic consultation were more readily available through some collaborative organization of this type, then perhaps anorectal and proctoscopic examinations by a proctologist might be recommended as a part of the annual physical examination. There seems no doubt that, if such routine examinations were to be carried out, many cases of malignant disease of the colon and rectum would be discovered earlier and could be successfully treated.

Whatever mechanism or organization can best implement closer collaboration between and among medical and surgical specialists is the one that should be established in each community. As physicians interested in advancing the care of the sick, we must recognize that the next stage in the improvement of medical care demands the cooperation of specialists and the coordination of facilities. Even without any new drugs or better

methods than we now have, the practical care of patients could be much improved if our combined knowledge were made more generally available.

CONCLUSIONS

Many of us who have been in practice a good many years are realizing that, wonderful as it is and however much it has accomplished, the science of medicine, by itself, is not enough. We must practice the art of medicine, too, the art that takes into account and gives attention to the personal and emotional needs of the patient. All of us can recall old doctors we knew in our youth who were masters in the art of medicine and who performed miracles of diagnosis and healing without the scientific facilities we have today. We live in a different age, and we cannot and would not go back to the horse-and-buggy doctor any more than we would go back to the horse and buggy itself. Nevertheless, it is high time that we inculcate some of the spirit of the old family physician into our practice of medicine in this latter half of the 20th century. The epitome of that spirit, it seems to me, is to give our patients the very best that we possibly can. The methods of our time and the enormous volume of knowledge do not permit this to be done on any effective scale by each man working alone. But with the unselfish altruism and the love of humanity that have always characterized the practitioners of medicine in every era of the past, we can and will find the ways to express this spirit most effectively through collaborative efforts aimed at relieving the suffering of the individual human beings who are putting their trust in us to heal them and restore them to more abundant lives.

107 S. 17th St. (2).

CLINICAL NOTES

TREATMENT OF BELL'S PALSY WITH CORTISONE

W. P. Robison, M.D.
and
B. F. Moss, M.D., Augusta, Ga.

Though Bell's palsy is a common disorder that may occur in persons of any age from infancy to old age, little or no progress was reported in its treatment until recently. This familiar seventh nerve paralysis is usually of acute onset. The lesion has been described as inflammation of the nerve or of its sheath within the facial canal or elsewhere. Edema of the seventh nerve, of its sheath, or of the periosteal tissues of the surrounding facial canal, from noninflammatory changes, has also been thought capable of producing sufficient compression to disrupt function.

There is much controversy over the etiology of Bell's palsy, though several plausible theories have been advanced. Park and Watkins [1] have listed several of the causes that have been suggested as follows: (1) specific infectious neuritis, (2) vascular dysfunction with secondary ischemia of the facial nerve, (3) refrigeration, (4) subclinical mastoid infection involving the region of the fallopian canal, and (5) congenital stenosis of the fallopian canal associated with some precipitating factor. The majority of patients with this disorder are considered to be of the "idiopathic" type. In many cases no predisposing cause is evident. It is not uncommon, however, to receive a history of exposure to cold or drafts. In other instances we find the paralysis following an acute infection of the nasopharynx.

Though Alpers [2] says that some patients who have Bell's palsy may recover within a few weeks, he notes that severer involvements persist much longer and that the patient may recover only in the course of two to three months, or longer. Walshe [3] states, "Most cases begin to show voluntary movement within three to four weeks and then proceed to complete recovery within about three months." Wechsler [4] has noted the following concerning the course of Bell's palsy: "Mild facial paralysis, generally with minimal or no electrical changes, lasts two to four weeks. . . . Commonly, recovery takes place in a few months, up to six, and in very stubborn cases in a year or two." Brain [5] has found that most patients suffering from Bell's palsy will recover completely, though the course of the disorder is likely to extend over several months. Bing [6] seems to feel that this type of facial paralysis usually lasts several months. Apparently most authorities feel that in patients suffering from severe Bell's palsy recovery is not likely to occur in less than months.

Various methods of treatment are being used in attempt to cure Bell's palsy. Lathrop [7] has noted, "At the present time, the treatment appears to vary between doing nothing at all to surgical intervention in every case exhibiting a negative faradic test." Our use of cortisone in the treatment of two patients who were suffering from the early stage of Bell's palsy was prompted by a report of one such patient by Rothendler [8] in 1951.

REPORT OF CASES

CASE 1.—A 13-year-old girl was first seen on Feb. 15, 1952, with paralysis of the right side of the face that had persisted since the evening of Feb. 12. The facial weakness had gradually grown worse after a rather sudden onset. The patient related that she had washed her hair on Feb. 9 and had dried it with a mechanical blower. Some tenderness and moderate discomfort of the right side of the face was noticed on Feb. 10 and 11. There was no pain present at the time of her first visit. Physical examination revealed a complete paralysis of all the muscles on the right side of the face. There was drooping of the corner of the mouth and flattening of the nasolabial fold. The palpebral fissure was widened on the right. The patient could not close her right eye or wrinkle her forehead on the involved side. Attempts to close her eye caused an upward and lateral deviation of the eyeball. There was tearing in the right eye, with some evidence of conjunctival inflammation. The patient could not whistle or blow out her cheek. Hearing and taste were not tested. There was no sensory loss on the involved side. The patient did not

From the Department of Psychiatry and Neurology, Medical College of Georgia.

Dr. Philip A. Mulherin assisted in this study.

1. Park, H. W., and Watkins, A. L.: Facial Paralysis: Analysis of 500 Cases, Arch. Phys. Med. **30**: 749-762 (Dec.) 1949.
2. Alpers, B. J.: Clinical Neurology, ed. 2, Philadelphia, F. A. Davis Company, 1949, pp. 211-212.
3. Walshe, F. M. R.: Diseases of the Nervous System Described for Practitioners and Students, Baltimore, Williams and Wilkins Company, 1949, p. 271.
4. Wechsler, I. S.: Textbook of Clinical Neurology with an Introduction to the History of Neurology, ed. 7, Philadelphia, W. B. Saunders Company, 1952, pp. 267-268.
5. Brain, W. R.: Diseases of the Nervous System, ed. 3, London, Oxford University Press, 1947, p. 178.

complain of hyperacusis. The remainder of the examination was not remarkable. Cortisone therapy was begun immediately as follows: two 25 mg. tablets three times a day for 48 hours, then two 25 mg. tablets two times a day for the next 24 hours. Three days after the cortisone therapy was begun the patient showed improvement that was obvious and gratifying. She was able to close her right eye without difficulty, and all the formerly paralyzed muscles of the face had regained considerable strength. After the third day the cortisone was given as follows: one 25 mg. tablet three times a day for the next 10 days. On the seventh day of this treatment, there was only 10 to 15% of the original weakness remaining. At this time the patient was able to whistle, to close her right eye, and to wrinkle her forehead. There was virtually no asymmetry of the face, and the usual facial movements were done without difficulty. Six days later the patient was seen again, and recovery was complete.

CASE 2.—A 5-year-old boy was seen on Nov. 22, 1952, with a paralysis of the left side of the face, which had been present for one week. During this period no improvement had occurred. It was learned that the child had had an infection of his tonsils for the two weeks preceding his first visit. At this time he complained of pain inside the left ear. Neurological examination revealed a smoothing out of the nasolabial fold and a drawing of the mouth toward the right side. Frowning and raising of the eyebrow on the left side were impossible. The patient could not close his left eye, and the flow of tears was pronounced. The left cheek was noticed to puff out during respiration. There was no sensory loss present. Hyperacusis was not complained of. The taste was not tested. Special auditory tests were not made, but there appeared to be a minimal impairment of hearing on the left. The remainder of the neurological examination was normal. Further physical examination revealed an acutely inflamed left ear drum with evidence of otitis media. Only mild inflammation of the right ear drum was found. There was enlargement of both tonsils with accompanying inflammation. The nasopharynx showed signs of moderate infection. The remainder of the examination was not remarkable. Cortisone therapy for the facial paralysis was begun with 25 mg. initially by mouth followed by 12.5 mg. orally every six hours for the first day. For the next four days 12.5 mg. was given orally every six hours. Treatment of the left ear, the tonsils, and the nasopharynx was carried out separately by an ear, eye, nose, and throat specialist. On the fifth day, the child was seen and only about 10% of the original weakness of the left side of the face remained. The child was able to close his left eye, to whistle, and to wrinkle his forehead. Only minimal asymmetry was present, and there was no evidence of tearing. Marked improvement of the left ear, tonsils, and the nasopharynx was noted at this time. For the next five days the child was given 12.5 mg. of cortisone orally three times a day. By the 10th day virtually no evidence of Bell's palsy remained and the general physical condition of the child was good. For the next seven days the therapy was as follows: 12.5 mg. of cortisone orally three times a day for four days, then 12.5 mg. orally daily for the next three days. The child was seen again on the 17th day, and recovery was complete.

The use of cortisone therapy in these two patients was followed by prompt recovery. No patient suffering from Bell's palsy seen previously in our department over the last 15 years has recovered in less than several months. Since our observation of these two patients, whom we treated with cortisone on the basis of Rothendler's original report, he has published a study of seven other patients who were similarly treated.[9] One of his patients had shown paralysis for 10 days prior to cortisone administration. During this period faradic tests had shown indications of nerve atrophy. This patient showed no response to cortisone. The other six patients, with no evidence of nerve atrophy, responded promptly to cortisone therapy. Rothendler states: "The beneficial action of cortisone in these patients can be assumed to be due to a reduction of congestion and related ischemia of the nerve and its sheath in the bony canal." To our knowledge the only other patients reported to have recovered from Bell's palsy so promptly were those who had stellate blocks by Swan.[10]

CONCLUSION

We are encouraged by the results of cortisone therapy in these two patients suffering from the early stages of Bell's palsy. Obviously we cannot draw sweeping conclusions from observations so limited. We feel justified in the hope that others will test the use of cortisone in this disorder.

University Hospital (Dr. Robison).

6. Bing, R.: Textbook of Nervous Diseases, translated by W. Haymaker, St. Louis, C. V. Mosby Company, 1939, p. 82.
7. Lathrop, F. D.: Affections of Facial Nerve, J. A. M. A. **152**: 19-25 (May 2) 1953.
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TRIAD OF PNEUMONIA, PNEUMATOCELE, AND SPONTANEOUS PNEUMOTHORAX IN INFANTS

Hyman E. Bass, M. D.
Norman Diamond, M.D.
and
Michael Schuman, M.D., New York

Intrathoracic collections of air have been of particular interest to the pediatrician because of the serious clinical picture often presented by infants and children with this condition. The dyspnea, cyanosis, and frequently critical state of these patients has led to a voluminous literature describing such cases. The purpose of this paper is to describe the concurrent association of pneumonia, pneumatocele, and spontaneous pneumothorax in three infants. This triad was first described in 1947 in the British literature.[1] This is the second report of this condition.

REPORT OF CASES

CASE 1.—A 6-week-old white girl was admitted to the Jewish Memorial Hospital on Feb. 24, 1952. She had been in good health and was gaining weight. Two days before admission, loss of appetite was noted and respiratory distress began. On admission, she was found to have a right pneumothorax, with 40% collapse and displacement of the heart to the left side. Inflammatory changes were noted in the right lung involving the right, middle, and lower lobes. Thoracentesis was done. Air and 2 cc. of purulent material were aspirated from the right side of the chest. On admission, the blood cell count showed 11 gm. per 100 cc. (69%) of hemoglobin (photoelectric [Lumitron] method); 3,040,000 red blood cells; 34,000 white blood cells; 49% polymorphonuclears; 7% band cells; 39% lymphocytes; and 8% monocytes. Penicillin therapy was begun. Repeat chest roentgenograms showed resolution of the pneumonia and reexpansion of the right lung. Chest roentgenograms on Feb. 28 and March 1 showed multiple pneumatoceles in the right lung, which disappeared before discharge. A follow-

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1. Heber, J.: Pneumatocele Occurring During Pneumonia and Rupturing to Form Pneumothorax, Proc. Roy. Soc. Med. **40**: 534 (July) 1947.

up film, taken 12 days after discharge, showed only flattening of the right leaf of the diaphragm as residual of the entire process.

Comment.—On admission, this child already had a pneumothorax that undoubtedly had been preceded by a pneumonic process. Air-containing shadows or pneumatoceles were seen as the collapsed lung reexpanded. The purulent material from the right side of the chest was contaminated so that the responsible organisms could not be identified.

CASE 2.—A 5-month-old white boy was admitted to the hospital on June 13, 1951, with physical signs of pneumonia of the upper lobe of the right lung and atelectasis. These findings were confirmed by chest roentgenograms. Five days later roentgenograms showed resolution following chloramphenicol therapy. The child had a temperature of 101.8 F on admission, which dropped to normal on the sixth hospital day. Laboratory examination on admission showed 8.8 gm. per 100 cc. (55%) of hemoglobin; 3,750,000 red blood cells; 18,600 white blood cells; segmented neutrophils, 54%; band cells, 8%; eosinophils, 1%; lymphocytes, 35%; and metamyelocytes, 2%. The child was discharged on June 20, 1951.

The patient was readmitted on June 21 because of acute respiratory distress. Roentgenograms showed multiple pneumatoceles with fluid levels in the right lung field. A hydropneumothorax was also present. A blood cell count on June 22 showed hemoglobin 8.8 gm. per 100 cc. or 55%; 3,640,000 red blood cells; 38,400 white blood cells; segmented neutrophils, 75%; band cells, 7%; lymphocytes, 15%; monocytes, 2%; and myelocytes, 1%. The temperature was 103 F. After therapy with penicillin and chloramphenicol (Chloromycetin), the temperature returned to normal on the fourth day. Two days later, the lung reexpanded almost entirely, with considerable decrease in the infiltration. On July 3 the lung fields were entirely clear. The child was discharged on July 6, 1951.

Comment.—The sequence of events in this case could be followed from onset to termination. The pneumonia that initiated the illness apparently subsided. However, this was followed by a spontaneous pneumothorax and the appearance in the reexpanding lung of air cysts with fluid levels. Rapid disappearance of these shadows occurred as the lung completely reexpanded.

CASE 3.—A 7-week-old Negro boy was admitted with a history of coughing for six days, vomiting, and fever. Six days prior to admission, the child had been seen in the pediatric clinic, the mother complaining that he had a "cold." The temperature rose, and the patient became dyspneic and began to vomit. On admission, the child had a temperature of 102 F. Hemoglobin was 8.6 gm. per 100 cc. (54%); 14,000 white blood cells; and the blood culture was normal. There was a mild injection of the pharynx. A chest roentgenogram showed pneumonia in the right lower lung field, extending outward from the right hilum. This was followed by a 30% pneumothorax of the right side, with cystic areas visualized in the right lower lung field. The right lung reexpanded after several days. A cystic area at the right base became progressively larger, giving the appearance of a large pulmonary cyst. This persisted even after the patient had become completely asymptomatic and had left the hospital.

Comment.—The illness in this child began with a pneumonia that was complicated by a spontaneous pneumothorax. A large pulmonary air cyst developed at the base of the expanding lung and persisted until discharge from the hospital.

COMMENT

The triad of pneumonia, pneumatocele, and spontaneous pneumothorax was seen in each of the three cases presented, and in the same order of occurrence; that is to say, the sequence of events was the same in all three cases. Each infant showed a moderately severe pneumonia that was soon followed by a spontaneous pneumothorax of the affected lung. Although all of these infants were alarmingly ill at the onset because of cyanosis and dyspnea, rapid improvement occurred with the reexpansion of the collapsed lung. As the collapsed lung began to expand, air-containing shadows or cysts were seen in all three cases, suggesting that small foci of necrotizing pneumonitis may have resulted in disruption of lung parenchyma. The entire process was a benign one, although, in case 3, the air cyst in the right lung of the patient still persisted at the time of his discharge. The organisms responsible for the original pneumonia in our cases were not isolated. The appearance of air cysts in the course of a necrotizing pneumonia suggests infection by a mixture of organisms.[2] Caffey [3] has pointed out the generally benign behavior of these pulmonary cysts and that spontaneous regression without surgical removal is the rule even when they are demonstrated during the first weeks or months of life. A careful study of our cases suggests that these air cysts are acquired, are preceded by an episode of pneumonia, and may be associated with pneumothorax or pyopneumothorax. The pneumothorax may be so transient that unless roentgenograms are taken at sufficiently short intervals, this complication may be easily missed.

SUMMARY

Three concurrent cases of pneumonia, pneumatocele, and spontaneous pneumothorax are described. The importance of this triad occurring in infants is emphasized.

12 E. 76 St. (21) (Dr. Bass).

2. Rabin, C. B.: X-Ray Diagnosis of Chest Diseases, Baltimore, Williams & Wilkins Company, 1952.

3. Caffey, J.: On the Natural Regression of Pulmonary Cysts During Early Infancy, Pediatrics **2**: 48 (Jan.) 1953.

COUNCIL ON PHARMACY AND CHEMISTRY

REPORT OF THE COUNCIL

Inasmuch as there have been many inquiries concerning the possible harmful effects of chloramphenicol, the Council has reviewed the status of this drug and adopted the following statement, which appears in the 1953 edition of New and Nonofficial Remedies, for publication in THE JOURNAL.

R. T. STORMONT, M.D., *Secretary.*

CHLORAMPHENICOL

Because of the occurrence of serious and fatal blood dyscrasias, it is advisable to restrict the use of chloramphenicol to the treatment of typhoid fever and other serious infectious diseases caused by organisms controlled by chloramphenicol but resistant to other antibiotics or other forms of treatment.

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

Hydrocortisone Acetate (See New and Nonofficial Remedies 1953, p. 351).

The Upjohn Company, Kalamazoo, Mich.

Ointment Cortef Acetate: 5 gm. tubes. An ointment containing 10 or 25 mg. of hydrocortisone acetate in each gram. U. S. trademark 583,191.

Mephenesin (See New and Nonofficial Remedies 1953, p. 466).

Physicians' Drug & Supply Company, Philadelphia.

Tablets Tolansin: 0.25 and 0.5 gm.

Oxytetracycline (See New and Nonofficial Remedies 1953, p. 124).

Pfizer Laboratories, Division of Chas. Pfizer & Co., Inc., Brooklyn.

Pediatric Drops Terramycin: 1 gm. vials. A powder with added flavoring for suspension in water to give a solution containing 100 mg. of oxytetracycline in each cubic centimeter.

Penicillin for Inhalation (See New and Nonofficial Remedies 1953, p. 132).

The Evron Company, Inc., Chicago.

Soluble Tablets Potassium Penicillin G: 50,000, 100,000, 200,000, and 250,000 units.

Penicillin for Oral or Sublingual Administration (See New and Nonofficial Remedies 1953, p. 133).

The Evron Company, Inc., Chicago.

Tablets Potassium Penicillin G (Buffered): 50,000, 100,000, 200,000, and 250,000 units. Buffered with calcium carbonate.

Phenylephrine Hydrochloride-U.S.P. (See New and Nonofficial Remedies 1953, p. 201).

Winthrop-Stearns, Inc., New York.

Solution Neo-Synephrine Hydrochloride 0.25%: 15 cc. plastic spray bottles. A solution containing 2.5 mg. of phenylephrine hydrochloride in each cubic centimeter. Preserved with phenylmercuric acetate 1:50,000.

Testosterone Propionate-U.S.P. (See New and Nonofficial Remedies 1953, p. 398).

S. J. Tutag & Company, Detroit.

Solution Testosterone Propionate in Oil with Benzyl Alcohol 3%: 10 cc. vials. A solution in sesame oil containing 25 or 50 mg. of testosterone propionate in each cubic centimeter.

COUNCIL ON FOODS AND NUTRITION

The Council has authorized publication of the following statement, which was prepared jointly by the Food and Nutrition Board, National Research Council, and Council on Foods and Nutrition of the American Medical Association.

JAMES R. WILSON, M.D., *Secretary.*

A STATEMENT OF GENERAL POLICY CONCERNING THE ADDITION OF SPECIFIC NUTRIENTS TO FOODS

During the 1930's certain nutritional deficiencies were prevalent in the population of the United States, and newly developed synthetic vitamins were being used in foods with little or no scientific guidance. In 1939 and again in 1945, the Council on Foods and Nutrition of the American Medical Association adopted its policies on the proper additions of vitamins and minerals to foods.[1] In 1941 the Food and Nutrition Board (originally the Committee on Foods and Nutrition) of the National Research Council likewise adopted a policy on the addition of specific nutrients to foods. These statements of policy have now been reconsidered jointly by the Food and Nutrition Board and the Council on Foods and Nutrition in the light of experience and of new developments. There is good evidence to indicate that the policies have been beneficial to the public and have encouraged sound nutritional practices. The policies are therefore reaffirmed in principle and, with revision of wording, are embodied in the following statements:

1. With carefully defined limitations, the principle of the addition of specific nutrients to certain staple foods is endorsed for the purpose of maintaining good nutrition as well as for correcting deficiencies in the diets of the general population or of significant segments of the population. The requirements for endorsement of the addition of a particular nutrient to a particular food include (*a*) clear indications of probable advantage from increased intake of the nutrient, (*b*) assurance that the food item concerned would be an effective vehicle of distribution for the nutrient to be added, and (*c*) evidence that such addition would not be prejudicial to the achievement of a diet good in other respects. These requirements have been met in the specific cases indicated in paragraph 6 below.

2. The desirability of meeting the nutritional needs of the people by the use of natural foods as far as practicable is emphasized, and to that end education in the proper choice and preparation of foods and the betterment of food production, processing, storage, and distribution so as to provide more fully the essential nutrients native thereto are to be encouraged.

3. In order to avoid undue artificiality of food supply, foods chosen as vehicles for the distribution of additional nutrients should be, whenever practicable, those foods which have suffered loss in refining or other processing, and the nutrients added to such foods should preferably be the kinds and quantities native to the class of foods involved.

4. The addition of other than natural levels of nutrients to foods which are suitable vehicles of distribution may be favored when properly qualified judgment indicates that the addition will be advantageous to the public health and when other methods for effecting the desired purpose appear to be less feasible.

5. Whenever technological and economic developments lead to extensive reduction in the consumption of a staple food, with a consequent nutritionally significant reduction in the intake of an essential nutrient or nutrients, consideration by qualified bodies should be given to the desirability of restoring such nutrient or nutrients to the dietary.

6. The endorsement of the following is reaffirmed: the enrichment of flour, bread, degerminated corn meal, and corn grits; the nutritive improvement of whole grain corn meal and of white rice; the retention or restoration of thiamine, niacin, and iron in processed food cereals; and the addition of vitamin D to milk, of vitamin A to table fats, and of iodine to table salt.

ACCEPTED FOODS

The following products have been accepted as conforming to the rules of the Council.

JAMES R. WILSON, M.D., *Secretary.*

Comstock Canning Corporation, Newark, N. Y.

Comstock Brand Dietetic Pack Sweet Peas

This product consists of Famous Variety peas packed in water without any added salt.

Analysis (submitted by manufacturer).—Total solids 10.7%, moisture 89.3%, protein 3.0%, crude fiber 1.4%, available carbohydrate 5.9%, and sodium 5.0 mg./100 gm.

Calories.—0.41 per gram; 11.6 per ounce.

Use.—For use in low-sodium and other therapeutic diets.

George B. Vrooman, Inc., Philadelphia.

Tux Brand Dietetic Pack Apple Sauce

This product consists of apples that are processed and packed in water without any added sugar or salt.

Analysis (submitted by distributor).—Total solids 11.3%, moisture 88.7%, fat extract 0.13%, protein (N × 6.25) 0.15%, crude fiber 0.57%, available carbohydrate 9.71%, and sodium 1.6 mg./100 gm.

Calories.—0.41 per gram; 11.7 per ounce.

Use.—For use in low-calory, low-sodium, and other therapeutic diets.

1. Annual Meeting of the Council on Foods, J. A. M. A. **113**: 681 (Aug. 19) 1939. Policies of the Council with Respect to the Nutritive Quality of Foods, ibid. **129**: 348-349 (Sept. 29) 1945.

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Cable Address . . . . . "Medic, Chicago"

POOLED PLASMA AND JAUNDICE

Homologous serum jaundice is not a new disease, for it was first recognized nearly 70 years ago by Lurman,[1] who produced jaundice in 191 of 1,293 persons vaccinated against smallpox, by the use of human lymph stored in glycerine and derived from smallpox vesicles. A second batch of material similarly prepared did not produce jaundice. Between 1937 and 1939 there appeared in the English literature reports of several outbreaks of latent jaundice following the administration of pooled hyperimmune human serum prepared for the control of certain viral diseases. At least one of these outbreaks was serious.[2] The Ministry of Health stated that the hyperimmune serum had been refrigerated.[3] Since hyperimmune serum was not always accompanied by a reduction in attack rate of the disease for which it was administered, it was not widely used and the problem did not grow to large magnitude until World War II, when pooled human serums were introduced as the stabilizing agent in the preparation of yellow fever vaccine. In many thousands of those receiving this vaccine, homologous serum jaundice developed, with the result that the vaccine was later prepared without the addition of serum. This correction, however, was not carried out into the preparation of pooled plasma, which also came into general use during the same period.

Millions of units of pooled human plasma were processed by freeze drying, a procedure thoroughly established, even at that time, to be one of the most effective means known for the preservation of the activity and virulence of most, if not all, viruses. The continued high incidence of homologous serum jaundice following the transfusion of plasma eventually resulted in condemnation of this valuable product, because a high percentage of plasma pools contained the carrier virus. The attack rate of jaundice following use of this plasma ranged between 5 and 22%. While it was recognized that the pathogenic agent responsible for this serious complication of plasma therapy was a virus, it was not realized that the practice of lyophilizing, freezing, or refrigerating pooled plasma preserved not only the proteins of plasma but also the proteins of the virus.

At the end of World War II, large stockpiles of pooled dried plasma were on hand and were distributed among the various states for administration to patients needing plasma. The plasma was later withdrawn because of the high attack rate accompanying its administration. When it was not yet known that exposure of pooled plasma to ultraviolet light was ineffective in reducing the attack rate of homologous serum jaundice, these recalled pools were reconstituted with water, pooled into larger pools, and exposed to ultraviolet light. As a result, most, if not all, of the national stockpile of plasma was contaminated with virus. Thereafter, these massive plasma pools were lyophilized once again, preserving the virus and accounting for the higher incidence of homologous serum jaundice (22%) that occurred in Korea. Thus a condition was created that could not with greater certainty have arisen had this been the goal that was sought.

Two other errors have subsequently followed. The first was to condemn the use of plasma without appreciating that this untoward experience arose from the methods employed in the preservation of plasma and second, to consign most, if not all, plasma currently collected to a fractionation program. The protein fractions have provided an excellent tool for research. The serum albumin prepared has been of great value clinically, but its expense is essentially tenfold that incurred when community blood banks prepare the same amount of albumin as plasma from outdated whole blood. Gamma globulin, which has proved itself as a means of preventing and controlling measles epidemics, is currently under investigation for the prevention of poliomyelitis and the treatment of infectious hepatitis. The ultimate demand for gamma globulin will depend on the development of virus vaccines. Should these develop, the fractionation program may have little clinical usefulness except in the management of certain abnormalities in coagulation. While the albumin, gamma globulin, and antihemophilic globulin fractions appear free of the virus of homologous serum jaundice, this hazard continues to exist in the preparation of human prothrombin, thrombin, and fibrinogen. It is readily understandable that in serious bleeding episodes the benefits of these substances may outweigh the hazards of homologous serum jaundice that they introduce. All these substances, however, are known to produce antibodies, and when administered for long periods of time they lead to further hemorrhage.

Since most, if not all, viruses become attenuated and "die" when stored at room temperature in a liquid state, virologists have learned that a virus that they wish to preserve should not stand long under these conditions, lest they lose their activity. This same procedure is adaptable to the preparation of pooled plasma, because the plasma proteins are more stable than is generally appreciated. Room temperature storage of pooled plasma for six months or longer offers an immediate opportunity for community blood banks to salvage this product, which is currently being discarded. Studies reported in this issue by Allen, Enerson, Barron, and Sykes (page 103) demonstrate that the principal latent changes in the globulin

1. Lurman, F.: Eine Icterusepidemie, Berl. Klin. Wchnschr. **22**: 20, 1885; quoted by Hirsch, A.: Handbook of Geographical and Historical Pathology, translated by C. Creighton, London, New Sydenham Society, 1886, vol. 3, p. 420-424.

2. MacNalty, A. S.: Acute Infective Jaundice and Administration of Measles Serum, in Annual Report of the Chief Medical Officer of the Ministry of Health for the Year 1937, London, His Majesty's Stationery Office, 1938, p. 38. Propert, S. A.: Hepatitis After Prophylactic Serum, Brit. M. J. **2**: 677, 1938. Jervis, J. J., quoted in Memorandum Prepared by Medical Officers of the Ministry of Health, Lancet **1**: 83, 1943.

3. Maycock, W. D. A. (Ministry of Health, London): Personal communication, 1950.

fractions do not appear to affect the clinical usefulness of liquid plasma stored at room temperature for at least three years. It is suggested that dextran and other synthetic plasma volume expanders be used for the treatment of shock until blood is available. This will conserve plasma for use in treating hypoproteinemia in patients unable to eat and in whom rapid correction of hypoproteinemia is desirable. Many of these patients can be prepared for surgery when otherwise the operative risk may be so great that surgery seems unwise.

THE CAUSE OF DEATH

The diseases that afflict mankind, their incidence, their causes, their response to treatment, and their eventual termination are not only of scientific interest but of personal interest to all human beings. In an exhaustive study, Bogen and his associates [1] stress the inadequacies of current collections of data, pointing out that the relative frequency and seriousness of various diseases may only be surmised from fragmentary information presently available. For example, large populations have not been carefully observed from birth to death for the purpose of recording the incidence of all functional and organic disturbances or even those serious enough to cause persons to seek medical and hospital care. Questionnaire and interview surveys frequently suffer from the effects of ignorance, forgetfulness, and deliberate deception, while the records of physicians in general practice have rarely been compiled and reported. Sickness and absenteeism records are generally confined to restricted samples of a population over brief periods of time and seldom yield complete and accurate diagnostic data. For the most part, mortality statistics refer to the primary or chief cause of death as stated on death certificates; however, they do not reveal the incidence of contributory diseases that might have produced death nor do they supply information regarding the incidence of nonfatal conditions from which patients recover.

According to Bogen and his associates, more extensive and reliable information may be obtained through observation and study of large groups of patients in hospitals. It is maintained that in hospital reports emanating from various corners of the world there is a profusion of data for successive years pertaining to the frequency of various diseases and the deaths caused by them. Study of these data revealed that 1,168,139 patients discharged from the Los Angeles County General Hospital during the 30 year period 1918-1948 constituted about one-fifth of all hospitalized patients in this community and that the records of the hospital reflected changes both in population trends and in diseases and treatment during a period covering two world wars. In general, equal numbers of men and women were admitted to the Los Angeles County General Hospital, with patients of Latin-American or Mexican origin, the majority of whom were born in the United States, constituting about one-fifth of all patients treated at the hospital during the three decades. In 1918 approximately 5% of all patients were Negroes, while in 1948 the number was increased to 25% of the total. European-born patients made up about one-fifth of the total number of patients admitted to the hospital during the early years of the period, while later on this was reduced to one-twentieth of the total. Taken together, 112,409 patients, or 10% of all patients admitted, died at the hospital during the 30 year period.

Using the individual titles in the new International List of Causes of Disease and Death, the commonest diagnoses made by physicians at the Los Angeles County General Hospital during three decades consisted of normal pregnancy and delivery, with 218,158 such diagnoses, or 8% of the entire number of diagnoses. Only 642, or 0.3% of the patients with a diagnosis of normal pregnancy and parturition, died while in the hospital. Of 33,715 patients in whom a diagnosis of abortion or premature delivery was made, 435, or 1.2% of such cases, occurred in patients who died while in the hospital. During this period there was a total of 23,135 diagnoses of complications of pregnancy and childbirth, of which 2,142, or 9%, occurred in patients who died while in the hospital. In recent years the incidence of pregnancies has increased, abortions remaining the same, but the incidence of complications has declined sharply. As far as this study is concerned, improved prenatal care and the prevention of the occurrence of complications appear to have affected maternal mortality even more than has the more effective treatment of obstetric complications after they had arisen.

Traumatic injuries accompanied by multiple or unspecified wounds were the next commonest conditions encountered, with 61,643 diagnoses made and 3,396 deaths. In general, the proportion caused by traffic accidents has been found to have increased while those caused by industrial accidents or personal attacks have diminished. Bronchopneumonia, the third most frequently made diagnosis, occurred 49,330 times, or in 2% of the total number of diagnoses. Nearly half of all the patients with bronchopneumonia died while in the hospital, the mortality rate for this disease being higher than for any other. The improved prognosis attributable to the use of sulfonamides and antibiotics in later years is obscured by the large number of cases in which terminal bronchopneumonia was a concomitant of some other primary condition, such as malignant disease or cardiac failure. One-fourth of 13,654 patients with lobar pneumonia died while in the hospital; the mortality rate in later years fell sharply owing to improved treatment.

A diagnosis of pulmonary tuberculosis was made in 44,430 patients, 14,021 of whom died while in the hospital. This disease was the fourth most frequently made diagnosis, and it was third among hospital deaths. Arteriosclerotic heart disease proved to be the fifth most frequently diagnosed disease, taking place in 39,493 patients; however, it was second among causes of death in the hospital, with 14,647 patients, or 35% of the total, dying. This survey showed that cardiovascular-renal diseases and malignant tumors have become by far the most important causes of death. The aggregate of all cases of neoplastic disease numbered 101,724, with the number of deaths occurring in the hospital being placed

1. Bogen, E.; Butt, E. M., and Djang, A.: Diseases and Deaths: I. A Summary of Data from the Los Angeles County General Hospital, 1918 to 1948, California Med. 78: 501 (June) 1953. Bogen, E.; View, O., and Butt, E. M.: Diseases and Deaths: II. A Statistical Survey of 40,130 Autopsies at the Los Angeles County General Hospital, 1918 to 1948, ibid. 79:16 (July) 1953.

at 27,549. The incidence in the diagnosis of neoplastic disease, especially that involving the respiratory tract, was found to have greatly increased during recent years.

In summation, circulatory diseases were found to have caused more deaths at the Los Angeles County General Hospital during the period 1918-1948 than any other disease, with respiratory diseases, infections, nervous diseases, violence, digestive diseases, and neoplasms next in that order. Of 1,168,139 patients admitted to the hospital during this period, 112,409 persons died while in the hospital. Autopsy was performed in 40,130 cases, or in 36% of the patients who died. Autopsies were performed relatively more frequently on deceased white persons than on nonwhite patients, with more than 75% of the total number of autopsies being done on white persons, 15% on Mexicans, and about 7% on Negroes. As a rule, permission for autopsy was more difficult to obtain in the case of women than of men, in old than in young persons, and in Negro than in white patients.

Finally, it should be pointed out that these hospital data cannot be readily related to the exposed population. A hospital in a large city may draw patients from a very large area; hence, hospital deaths alone cannot be used to compute age-specific mortality rates for each cause, and these mortality records over a period of years do not provide a measure of mortality trends.[2] Age-specific rates by cause and by sex are, of course, reported by the National Office of Vital Statistics for the nation, for states, and for subdivisions of states.

THE FIFTIETH ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

The Council on Medical Education and Hospitals of the American Medical Association will convene on February 7, 8, and 9, 1954, at the Palmer House in Chicago for its 50th annual meeting held in conjunction with the Federation of State Medical Boards of the United States and the Advisory Board for Medical Specialties as the Annual Congress on Medical Education and Licensure.

A half century ago, Dr. Lewis S. McMurtry, as President of the American Medical Association, drew the attention of those attending the first conference to the fact that the American Medical Association from its inception had as its chief purpose the promotion and advancement of the standard of medical education in the United States. The establishment of the Council on Medical Education at that time was the literal carrying out of one of the most important functions of the parent organizations, namely, the American Medical Association and the medical colleges. That first meeting "was called for the purpose of bringing together the various examining and licensing powers of the states and territories, to secure mutual interchange of ideas and counsel."

The Congress on Medical Education and Licensure scheduled February 7-9, 1954, will bring some of our current problems of undergraduate and postgraduate medical education and licensure, as well as preprofessional education, to the attention of those attending in order "to secure mutual interchange of ideas and counsel." Problems connected with solving the military medical personnel needs in their relations with medical education and licensure, and other current problems of importance, will be presented. A complete program of the congress appears on another page of this issue of THE JOURNAL. Those planning to attend the congress should make their hotel reservations immediately.

REACTIVATION OF RHEUMATIC FEVER AFTER MITRAL COMMISSUROTOMY

Structural deformities of cardiac valves are the usual accompaniment of rheumatic fever. The lesion most commonly produced by rheumatic carditis is stenosis of the mitral valve. The deleterious effect of this lesion on the pulmonary circulation and the right side of the heart leads in a considerable proportion of cases to eventual cardiac decompensation and death. The idea of correcting the stenosis by direct incision was entertained by many clinicians, but it was only recently that the newly acquired experience in cardiac surgery made it possible to invade the cardiac chambers and correct the existing valvular deformity. The technical problem in treating mitral stenosis was that of relieving the stenosis without the production of significant regurgitation.

One of the important problems confronting the surgeon about to perform a mitral commissurotomy is the question of whether the rheumatic infection in a given case has completely subsided. The possibility of reactivating a latent but not recognized infection by the surgical trauma had to be taken into consideration. Glover and his associates [1] feel that this particular danger could be more or less obviated by the practice of intermittent and long-continued chemotherapy or administration of antibiotics. In a recent communication the same group [2] describe a febrile syndrome that they had observed in a number of their patients subjected to mitral commissurotomy. Thus, out of 179 patients subjected to this operation, 67 had recurrent chest pain after discharge from the hospital. In 43 of these the febrile syndrome occurred, some having pain and fever only and others having in addition such manifestations as psychoses, heart failure, cardiac arrhythmia, arthritis, and hemoptysis. There was no history in any of the patients in this group of a preceding sore throat, upper respiratory infection, or any unrelated infection. The authors are therefore inclined to consider these delayed phenomena as the effect of reactivation of a latent rheumatic infection set in motion by the trauma of the surgical intervention. The exact pathogenesis of this mechanism is purely speculative. Because of the frequent occurrence of this syndrome after mitral commissurotomy and its absence after any other nonrheumatic cardiac or pulmonary surgery and because of the frequent cardiac involvement, the syndrome is regarded as a reactivation of rheumatic fever.

2. Dickinson, F. G., and Welker, E. L.: What is the Leading Cause of Death? Two New Measures, Bulletin 64, American Medical Association, 1948. Dickinson, F. G., and Welker, E. L.: Mortality Trends in the United States, 1900-1949, Bulletin 92, American Medical Association, 1952.

1. Glover, R. P.; O'Neill, T. J. E., and Bailey, C. P.: Commissurotomy for Mitral Stenosis, Circulation **1**: 329-342 (March) 1950.

2. Soloff, L. A., and others: Reactivation of Rheumatic Fever Following Mitral Commissurotomy, Circulation **8**: 481-493 (Oct.) 1953.

ORGANIZATION SECTION

FIFTIETH ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Palmer House, Chicago, Feb. 7, 8, and 9, 1954

All meetings are open to physicians and others interested in medical education

Program

Advisory Board for Medical Specialties

SUNDAY MORNING, FEB. 7, 9:00 A. M.
ROOM 14

ROBERT A. MOORE, M.D., *Presiding*

Address of the President

ROBERT A. MOORE, M.D., President, Advisory Board for Medical Specialties, St. Louis

A Sound Program for Graduate Training in Non-University Hospitals

a. *From the Hospital Viewpoint*

JOHN C. LEONARD, M.D., Director of Medical Education, Hartford Hospital, Hartford, Conn.

b. *From the Educational Viewpoint*

FORD K. HICK, Professor of Medicine, University of Illinois College of Medicine

Current Trends in Examination Procedures

JOHN T. COWLES, Ph.D., Educational Testing Service, Princeton, N. J.

The Federation of State Medical Boards of the United States

SUNDAY AFTERNOON, FEB. 7, 2:00 P. M.
RED LACQUER ROOM

JOHN N. MCCANN, M.D., *Presiding*

Roll Call of Member Boards and Associate Members

Report of the President

JOHN N. MCCANN, M.D., Treasurer, Ohio State Medical Board, Youngstown

Report of the Secretary-Treasurer and Editor of the Federation Bulletin

WALTER L. BIERRING, M.D., Des Moines, Iowa

Appointment of Committees

Committee on Essentials of a Modern Medical Practice Act

a. *Report of the Chairman*

BRUCE UNDERWOOD, M.D., Secretary, Kentucky State Board of Health

b. *Highlights of the Survey*

GEORGE E. HALL, Staff Associate, Bureau of Legal Medicine and Legislation, American Medical Association

The Educational Component of Medical Licensure

WILLARD C. RAPPLEYE, M.D., Dean, Columbia University College of Physicians and Surgeons

The Relation of the Hospital Internship to Licensure

S. HOWARD ARMSTRONG, M.D., Director of Medical Education, Cook County Hospital, Chicago

Council on Medical Education and Hospitals American Medical Association

MONDAY MORNING, FEB. 8, 9:00 A. M.
RED LACQUER ROOM

H. G. WEISKOTTEN, M.D., *Presiding*

Address of the Chairman: Fifty Years of Council Activity

H. G. WEISKOTTEN, M.D., Chairman, Council on Medical Education and Hospitals, American Medical Association

Bridging a Gap

EDWARD J. MCCORMICK, M.D., President, American Medical Association

Solving the Problem of Military Medical Personnel Needs

FRANK B. BERRY, M.D., Assistant Secretary of Defense (Health and Medical)

Highlights from the Survey on Preprofessional Education

AURA E. SEVERINGHAUS, Ph.D., Associate Dean, Columbia University College of Physicians and Surgeons

How Bad Is the Distribution of Physicians?

FRANK G. DICKINSON, Ph.D., Director, Bureau of Medical Economic Research, American Medical Association

Developments in the National Fund for Medical Education

(Speaker to be Announced)

American Medical Education Foundation

LOUIS H. BAUER, M.D., President American Medical Education Foundation

MONDAY AFTERNOON, FEB. 8, 12:30 P. M.
CRYSTAL ROOM

SUBSCRIPTION LUNCHEON

As the Twig Is Bent. Panel Discussion on Professional Orientation

LEO S. BROWN, Moderator, Director of Public Relations, American Medical Association

MONDAY AFTERNOON, FEB. 8, 2:15 P. M.
RED LACQUER ROOM

FRANKLIN D. MURPHY, M.D., *Presiding*

Postgraduate Medical Education

A Preview of the Principal Findings of the American Medical Association's Survey of Postgraduate Medical Education

DOUGLAS D. VOLLAN, M.D., Council on Medical Education and Hospitals, American Medical Association

Panel Discussion: The Objectives of Postgraduate Medical Education

GEORGE AAGAARD, M.D., Dean, Southwestern Medical School of the University of Texas and Chairman, Committee on Continuation Education, Association of American Medical Colleges

ROSCOE PULLEN, M.D., Dean, University of Missouri School of Medicine

U. R. BRYNER, M.D., President, American Academy of General Practice, Salt Lake City

Panel Discussion: How to Achieve These Objectives

JOHN B. TRUSLOW, M.D., Dean, Medical College of Virginia

ROBERT PARKIN, M.D., Director of Postgraduate Education, University of Wisconsin Medical School

MAHLON DELP, M.D., Director of Postgraduate Education, University of Kansas School of Medicine

JOHN CONLIN, M.D., Director of Public Relations, Massachusetts Medical Society

Panel Discussion: The Three "F's"; Facilities, Faculty, and Finance; The Requirements of Postgraduate Programs

ROBERT HOWARD, M.D., Director of Postgraduate Education, University of Minnesota Medical School

FRODE JENSEN, M.D., Assistant Dean, New York University Postgraduate School of Medicine

FRANKLIN AMOS, M.D., Director of Professional Education, New York State Department of Health

Summing Up

FRANKLIN D. MURPHY, M.D., Chancellor, University of Kansas

MONDAY AFTERNOON, FEB. 8, 5:00 P. M.
ROOM 14

Reception for Registrants of the Congress by the American Medical Association

The Federation of State Medical Boards of the United States

MONDAY EVENING, FEB. 8, 7:00 P. M.
CRYSTAL ROOM

FEDERATION DINNER

JOHN N. MCCANN, M.D., *Toastmaster*

Address

EDWARD L. TURNER, M.D., Secretary, Council on Medical Education and Hospitals, American Medical Association

TUESDAY MORNING, FEB. 9, 9:00 A. M.
RED LACQUER ROOM

JOHN N. MCCANN, M.D., *Presiding*

Address of the President

JOHN N. MCCANN, M.D., President, Federation of State Medical Boards of the United States

Is Osteopathy a Cult?

GEORGE W. COVEY, M.D., Former Member, Nebraska Board of Medical Examiners

Report of First World Conference on Medical Education

WALTER L. BIERRING, M.D., Secretary-Treasurer, Federation of State Medical Boards of the United States

CREIGHTON BARKER, M.D., Secretary, Connecticut Medical Examining Board

M. H. CRABB, M.D., Secretary, Texas Board of Medical Examiners

CLINTON GALLAHER, M.D., Secretary, Oklahoma Board of Medical Examiners

E. S. HAMILTON, M.D., Member, Medical Examining Committee, Illinois Department of Registration and Education

J. J. MOORE, M.D., Member, Medical Examining Committee, Illinois Department of Registration and Education

WILLIAM J. SHAW, M.D., Vice President, Missouri Board of Medical Examiners

Evaluation of Credentials Submitted by Foreign Medical Graduates

STILES D. EZELL, M.D., Secretary, New York Board of Medical Examiners

Report of Committee on Licensure Problems

Representing:

Association of American Medical Colleges

The Federation of State Medical Boards of the United States

Council on Medical Education and Hospitals, American Medical Association

CHARLES A. DOAN, M.D., General Chairman, Dean, Ohio State University College of Medicine

CHARLES L. SHAFER, M.D., Chairman, Pennsylvania Board of Medical Education and Licensure

TUESDAY AFTERNOON, FEB. 9, 12:30 P. M.
CRYSTAL ROOM

JOHN N. MCCANN, M.D., *Presiding*

FEDERATION LUNCHEON

GENERAL SESSION

Reports of Committees: Executive, Resolutions, Nominations and Miscellaneous

ELECTION OF OFFICERS

INSTALLATION, PRESIDENT-ELECT, ELMER E. SCHNOOR, M.D., Grand Rapids, Mich.

THE MEDICAL SOCIETY OF NEW JERSEY

To permit readers of THE JOURNAL *to become better acquainted with the activities of state medical associations articles describing them will appear from time to time in these pages.*—ED.

Chronologically the oldest state medical society in the United States, the Medical Society of New Jersey (then called the New Jersey Medical Society) was founded July 23, 1766, at a meeting in Duff's Tavern in New Brunswick. The 14 physicians who adopted and signed the "instrument of association" that night met in response to a notice, published in the New York *Mercury*, June 27, which read: "A large body of the practitioners in physic and surgery in East New Jersey, having agreed to form a society for the advancement of their profession and the promotion of public good, hereby request and invite every gentleman of the profession in the province to attend a meeting at Mr. Duff's Tavern in the City of New Brunswick on Wednesday, July 23, at which time and place, the Constitution and Regulations of the Society are to be settled and subscribed." The society, which came into existence under the provincial government, derived its original charter from the King of England. Almost a century later (1864) its present charter was granted by the legislative act of the state of New Jersey. In the interim, the society's existence had been recognized by law in 1783; in 1790 it was incorporated by a legislative act that conferred general powers of property-holding; and in 1816 a second act of incorporation authorized the formation of district and county societies that would have power to examine candidates for licensure to practice medicine, after which successful candidates were granted licenses by the president of the state society, authorizing them to practice anywhere in New Jersey. The authority to grant the degree of "Medical Doctor," granted in 1825, is still in force, making the Medical Society of New Jersey the only agency in New Jersey that may confer the M.D. degree.

No sooner had the society's first project, the adoption of a fee schedule, been proposed, than "some evil-minded persons threw an odium on the proceedings tending to prejudice the minds of the inhabitants against so laudable an institution as the New Jersey Medical Society." The society's endorsement of the fee schedule was consequently held up until 1784, when the fee table was revived, its figures translated into the new United States currency, and a special committee appointed to tell the public why it was in their interest to have such a schedule, explaining that the recommended fees were maximal and that "every member is at liberty to abate what part of such bills he may think proper on account of poverty, friendship or other laudable motives." Good public relations thus established, the society continued to meet semiannually, holding a "southern" meeting in Burlington and a "northern" meeting in Princeton or New Brunswick. In 1790, however, opposition arose from a "rebellious" member, Paul Micheau, who opened a one-man medical school in which he gave one lecture a day for two months, charged $25 tuition, and sought to qualify his graduates as doctors of medicine. The attempts of Micheau and others to establish rival organizations were short lived, and in 1807 the New Jersey profession was reunited.

In 1819 the society took part in the establishment of the first U. S. Pharmacopeia; in 1837 it began stressing the need for a state hospital for the mentally ill, its subsequent report leading to the establishment at Trenton in 1848 of one of the first psychiatric hospitals in the country. In 1848, a year after its representatives had participated in the founding of the American Medical Association at Philadelphia, the *New Jersey Medical Reporter* was published and was made an official medium for publication of the society's activities. In 1859 the society established its own publication, the *Transactions*, which was succeeded in 1903 by the *Journal of the Medical Society of New Jersey*.

Since 1766, the society has been in continuous existence with the exception of the period between November, 1775, and November, 1781, when, half the membership being in the service of the American Army, regular meetings were suspended, and the period between November, 1795, and June, 1807. Its membership has grown to 5,476, an increase of about 100% having been noted in the past 20 years. The headquarters building at 315 W. State St., Trenton, houses the executive, legislative, and editorial offices and meeting rooms for the board of trustees and committees. Its officers for the current year are Dr. Henry B. Decker, Camden, president; Dr. Elton W. Lance, Rahway, president-elect; Dr. Vincent P. Butler, Jersey City, first vice-president; Dr. Lewis C. Fritts, Somerville, second vice-president; Dr. Marcus H. Greifinger, Newark, secretary; and Dr. Jesse McCall, Newton, treasurer.

Headquarters of New Jersey Medical Society.

Among the special projects in which the society is engaged are physicians placement service, plans for a medical school in New Jersey, emergency medical service, monthly membership newsletter, quarterly newsletter to cooperating agencies, health hints to newspapers, junior health hints to schools, state judicial council, county arbitration committees and the publication of a membership directory.

HAWAIIAN TOUR FOLLOWING SAN FRANCISCO MEETING

The Hawaiian Medical Association has announced a Scientific program for physicians who will take part in the American Medical Association's 13-day Hawaiian Holiday Tour, which will follow the annual A. M. A. meeting in San Francisco next June 21-25. The party will leave San Francisco aboard Pan American Airways Strato Clippers and United Air Lines Stratocruisers at 11:45 on the night of Friday, June 25th—the closing day of the convention—and arrive in Honolulu early the next morning. The party will stay at the Royal Hawaiian Hotel on Waikiki Beach. The return trip, scheduled to start at 4 p. m. on July 3, will be made on the luxurious Matson Liner, S. S. Lurline, which will dock in Los Angeles on July 8. All of the reservations are being handled for the A. M. A. by William M. Moloney, general agent, Room 711, 105 West Adams Street, Chicago.

According to Dr. Walter B. Quisenberry of the Department of Health of the Islands, the Hawaiian Medical Association has arranged for the setting up of an information desk in the lobby of the Royal Hawaiian Hotel to handle mail and telephone calls on the guests' arrival. The scientific program will be held in the Mabel Smyth auditorium from 8:30 a. m. to 10 p. m. on Monday, June 28. This program will be handled by a panel made up of surgeons and internists, who will be in the visiting party, as well as specialists practicing in the Islands. Audience participation will be encouraged. The afternoon and evening of June 28 and the morning of June 29 will be free. Between 2:30 and 5 p. m. on Tuesday, June 29, the society has planned a local scientific presentation at the Royal Hawaiian Hotel.

There will be a short address of welcome by Dr. Edwin K. Chung-Hoon, president of the Hawaii association. He will also give a pictorial review of leprosy and will be followed by Dr. Nils P. Larsen, whose subject will be "Medicine in Early Hawaii." Dr. Paul Gebauer will show a humorous movie entitled "Techniques of Surgery." A social hour, dinner, and entertainment will follow at the Niumalu Hotel. The evening will close with dancing. Dr. Quisenberry stated that the remainder of the time, beginning June 30 and ending July 3, will be free for the doctors and their wives to visit the other islands or enjoy the beach. "This will give the doctors time," he said, "to browse through orchid nurseries, watch Japanese archery, look into the crater of a live volcano, drive through jungles where ferns grow 30 feet high, and enjoy some of the water sports for which Honolulu is famous."

THE SCIENTIFIC EXHIBIT—SAN FRANCISCO MEETING

Among the special features that the Committee on Scientific Exhibit is planning for the San Francisco Meeting is the Special Exhibit on Fractures presented by a committee of which Dr. Gordon M. Morrison, Boston, is chairman. This year the committee will include "dash board injuries" as one of the topics.

A question and answer conference on heart disease is being planned in cooperation with the American Heart Association, as well as several exhibits on this subject. Several of the sections of the Scientific Assembly are planning special features, including the Section on General Practice with an exhibit on the "preceptor training program" and the Section on Pathology and Physiology with demonstrations on fresh pathology specimens.

The motion picture program is being arranged by the Committee on Medical Motion Pictures. Requests for time on the program should be sent directly to Mr. Ralph P. Creer, Secretary of the Committee, American Medical Association, 535 N. Dearborn St., Chicago 10, as early as possible.

Attention is called to the fact that applications for space in the Scientific Exhibit at the San Francisco Meeting will close on Jan. 18. Applications received after that date will be placed on the waiting list to be considered by the committee if space is available. Exhibits will be arranged in groups corresponding to the 21 sections of the Scientific Assembly. It is hoped, however, that each exhibit will be broad enough in scope to be of interest to physicians in general practice and to specialists other than those in whose section the exhibit is shown. Application blanks may be obtained from Section Representatives or from the Director, Scientific Exhibit, American Medical Association, 535 N. Dearborn St., Chicago 10.

NEW A. M. A. PUBLICATIONS

Bibliography on Medical Aspects of Civil Defense.—Prepared by the Council on National Emergency Medical Service.

Foreign Medical Schools.—This pamphlet, prepared by the Council on Medical Education and Hospitals, covers the current status of foreign medical schools and contains sections discussing medical licensure, immigration, medical practice in the United States, graduate training, the responsibility of hospitals in the selection of interns and residents, and undergraduate medical study in the United States and in foreign medical schools.

MEDICAL NEWS

ARIZONA

Annual Cancer Seminar.—The second annual cancer seminar of the Arizona division of the American Cancer Society will be presented Jan. 14-16 at Paradise Inn in Phoenix. Panel discussions are scheduled on the following topics: "Recent Advances in Cancer Therapy," "Neoplasms of the Central Nervous System," "Carcinoma of the Cervix," "Carcinoma of the Breast," "Exfoliative Cytology," "Surgical Methods for Relief of Intractable Pain," "Carcinoma of the Lung," "Trends in Cancer Research," "Leukemia and Lymphomas," and "Tumors of Childhood." Participants include Paul C. Aebersold, Ph.D., of the Atomic Energy Commission, Oak Ridge, Tenn.; and Drs. Percival Bailey, Chicago; Osborne A. Brines, Detroit; Charles S. Cameron, New York; Anthony R. Curreri, Madison, Wis.; Michael E. DeBakey, Houston, Texas; Leo H. Garland and David A. Wood, San Francisco; Elisha S. Gurdjian, Detroit; Joe V. Meigs and Ovar Swenson, Boston; and Eugene P. Pendergrass, Philadelphia. Moderators will be Drs. Ralph H. Fuller, Edward M. Hayden, and Hugh C. Thompson, all of Tucson, and Preston T. Brown, John A. Eisenbeiss, Douglas D. Gain, John R. Green, Dermont W. Melick, and Onie O. Williams, of Phoenix. For reservations write to the Arizona Division, American Cancer Society, 1429 N. First St., Phoenix.

CALIFORNIA

Bequest to Hospital.—More than $155,000 will go to the Shriners' Hospital for Crippled Children in San Francisco under terms of the will of the late J. Harold Brown, an Oakland banker.

Personal.—Dr. Maxwell Rosenblatt, Los Angeles, has been appointed head public health physician in the division of tuberculosis control of the county health department.——The medical faculty of the University of Freiburg in Baden, Germany, in collaboration with the United States Education Commission for Germany in Düsseldorf, has invited Dr. Robert Wartenberg, San Francisco, to be guest professor for one year at the university, where he was a staff member until 1935.——William Walter Greulich, Ph.D., science adviser to the U. S. Commissioner for Germany, has been appointed chairman of the U. S. Educational Commission in the Federal Republic of Germany. Dr. Greulich is on leave of absence from Stanford University School of Medicine, Stanford University-San Francisco, where he is professor of anatomy.——Horace W. Magoun, Ph.D., professor of anatomy, University of California at Los Angeles School of Medicine, has been awarded the 1953 United Cerebral Palsy-Max Weinstein award for his studies of factors promoting regeneration of nerve fibers and of the physiology of the cerebral cortex and basal ganglia in relation to cerebral palsy. The award, which was presented at the organization's annual convention, consists of a plaque and $1,000 in cash.

Course on Endocrine Disease.—"The Dynamics of Endocrine Disease," a graduate assembly designed to emphasize clinical physiology, diagnosis, and treatment, will be presented Feb. 8-13, at the Highland-Alameda County Hospital, 2701-14th Ave., Oakland, under the auspices of the committee for graduate medical education of the Alameda-Contra Costa Medical Association and the Institute for Metabolic Research of the Highland-Alameda County Hospital. Tuition is $100. Enrollment is limited to 100 students. Out-of-state faculty members include: Dr. Elmer Alpert, Rahway, N. J., Dr. Edwin B. Astwood, Boston, Dr. Edgar S. Gordon, Madison, Wis., Dr. George M. Guest, Cincinnati, Edwin E. Hays, Ph.D., Chicago, Dr. Edward E. Henderson, Bloomfield, N. J., and Dr. Frank H. Tyler, Salt Lake City. Panel discussions will include "Growth, Including a Consideration of Hormones in Relation to Cancer," "Principles and Practice of Diabetic Management," and "ACTH and Cortisone in Clinical Medicine." An endocrine clinic will be held Saturday. A social hour, 6:30 p. m., courtesy of Merck and Company, will precede the banquet at the Villa de la Paix in Oakland. Dr. Guest will have as his subject "French Wine Country," and Dr. Salvatore P. Lucia, San Francisco, will present "Some Wayward Tendrils of the Vine."

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

FLORIDA

Narcotic Violation.—Dr. Matthew Arnow, Eustis, pleaded guilty in the U. S. District Court at Ocala, Oct. 20, 1953, to a charge of violating the federal narcotic law. Sentence was suspended, and he was placed on probation for a period of two years.

Fellowship in Cancer Research.—Dr. J. Ernest Ayre, director, Cancer Institute at Miami, announces that a grant of $3,400 has been made to the institute to establish the Lawrence A. Wien fellowship in cancer research. This will enable the research division of the institute to extend its investigations in the biochemical field.

Society News.—At its October meeting in Miami, the Florida Pediatric Society elected Dr. C. Jennings Derrick, West Palm Beach, president, Dr. Lewis T. Corum, Tampa, vice-president, and Dr. Wesley S. Nock, Coral Gables, secretary-treasurer. ——The South Florida chapter of the Arthritis and Rheumatism Foundation was recently organized in Miami. The medical and scientific committee, under the chairmanship of Dr. Joseph F. Keeley Jr., Miami, will follow the broad policy of the national foundation with emphasis on local needs. Among the charter members are Drs. Elwin G. Neal and Robert F. Farrington, Miami, and Frederick P. Poppe, William P. Smith, and Jack Cleveland, Coral Gables.

ILLINOIS

Society News.—At the annual convention of the Illinois Academy of General Practice Dr. Pliney R. Blodgett, Chicago Heights, was named president, and Dr. Dewey M. Roberts, Alton, president-elect.

Narcotic Violation.—Dr. Henry O. Carlton, Benton, pleaded guilty in the U. S. District Court at Benton to an indictment charging violation of the federal narcotic law. On Nov. 19, 1953, sentence was suspended, and he was placed on probation for three years and fined $500.

Chicago

Society News.—At the meeting of the Chicago Neurological Society, International Relations Center, 116 S. Michigan Ave., 8 p. m., Jan. 12, case presentations will be made on hemispherectomy for infantile hemiplegia, extradural hemorrhage, preventive psychiatry in Korea, and the metabolism of convulsions.

Public Health Forums.—After a poll of its readers, the Chicago *Tribune* presented a series of free public health forums Dec. 28 and 29, 1953. Physicians participated in panel presentations on heart disease, cancer, arthritis and rheumatism, and colds and other respiratory infections. Each 90 minute forum was followed by a one hour question and answer period. Broadcasts and telecasts were made.

Doctors Emergency Service.—The 1954 placards are now available to participating physicians on the Doctors Emergency Service panel. The placard gives the physician traffic privileges in areas policed by the Chicago Police Department but not in zones policed by the Chicago Park District. Physicians listed on the medical emergency service panel of the Chicago Medi-

cal Society may have the 1954 placard by writing the Doctors Emergency Service, 86 E. Randolph St., Chicago 1, or applying in person at the society office.

Illinois Student Residence Hall.—The University of Illinois announces that students enrolled in three medical schools, the Stritch School of Medicine of Loyola University, the University of Chicago School of Medicine, and the University of Illinois College of Medicine, have moved into the new residence hall that has been opened in the Medical Center District, 818 S. Wolcott Ave. The nine-floor building can accommodate 405 students. Rooms also will be rented on a daily basis to official visitors of the university if vacancies occur. There are 196 double and 13 single rooms. Special facilities include a laundry room equipped with automatic washers and dryers. Food service facilities, including a cafeteria, dining rooms, kitchen, and snack bar, are located on the first floor. In the lounge on the second floor is a 27 in. television set. The building is the fourth new facility to be opened in 1953 in

University of Illinois Residence Hall.

the rapidly expanding, 35 acre medical center district. Previously placed into operation were the University of Illinois staff apartment building; Kidston House, a staff apartment building at Presbyterian Hospital; and the 500-bed Veterans Administration Hospital.

KANSAS

Society News.—At a recent meeting in Kansas City, the Kansas Trudeau Society named Dr. Charles Pokorny, Halstead, president-elect, and Dr. Monti L. Belot Jr., Lawrence, secretary-treasurer. Dr. E. L. Andre Baude, Topeka, serves as president.

State Commission on Alcoholism.—The Kansas Commission on Alcoholism, established by law passed during the 1953 session of the legislature, announces the opening of its offices at 315 W. Fourth St., Topeka. Activities will be administered by a board that includes Drs. Karl E. Voldeng, Wellington, George W. Jackson, Topeka, and Z. Miles Nason, Kansas City. The duties of the commission are (1) to study the problem of alcoholism, including methods and facilities available for the care, custody, detention, treatment, employment, and rehabilitation of alcoholics; (2) to provide for research into factors leading to alcoholism; (3) to promote meetings for the discussion of problems confronting clinics and agencies engaged in the treatment and rehabilitation of alcoholics; (4) to disseminate information on alcoholism for the assistance and guidance of residents and courts of the state; (5) to suggest reasonable regulations for the care, treatment, and discipline of patients and persons committed to state institutions because of alcoholism; and (6) to make regulations for the care, treatment, and discipline of patients and persons committed to the commission's care and for the management of the commission's affairs.

MARYLAND

Society News.—At the dinner meeting of the Otolaryngological Section of the Baltimore City Medical Society Jan. 12, 6:30 p. m., in the Johns Hopkins Club, Homewood Campus, Dr. Robert Smith, chief of surgery, National Cancer Institute, will speak on surgical approach to head and neck cancer in man. Discussion will be by Dr. Grant E. Ward, Baltimore.

Personal.—Dr. Emil Novak, assistant professor of obstetrics and gynecology, emeritus, Johns Hopkins University School of Medicine, Baltimore, gave the second annual Medical Foundation lecture, "Application of Physiologic and Pathologic Principles to Surgery of the Ovary," in South Bend, Ind., Nov. 13, 1953. The following day, he was moderator of a seminar on gynecologic and obstetric pathology sponsored jointly by the South Bend Medical Foundation and the Indiana Association of Pathologists on the campus of Notre Dame University.

McCormack Award to Dr. Riley.—Dr. Robert H. Riley, Baltimore, state director of public health for the last 25 years, was honored by the National State and Territorial Health Officers Association at its meeting in Baltimore, Nov. 9. The Arthur T. McCormack award, which was presented to him, points out that his labors "have been a guide for health officers throughout the country in planning the organization and administration of medical services which have strengthened the total program of public health." Dr. Riley became affiliated with the state health department in 1914; from 1920 to 1925 served as director of the department's bureau of communicable diseases; from 1925 to 1928 as assistant director of the department; and in 1928 was named state director. In 1939 he was given a life tenure in this position by legislative act.

MASSACHUSETTS

House Officers' Lecture.—The House Officers' Association, New England Center Hospital, Boston, announces that on Jan. 11 at 7 p. m. Dr. Harold G. Wolff, professor of medicine (neurology), Cornell University Medical College, New York, will discuss "Headache Mechanisms" in the Stearns Auditorium of New England Center Hospital. All interested persons are invited.

Dr. Tedeschi Goes to Philadelphia.—Dr. C. Giorgio Tedeschi, assistant professor of pathology, Boston University School of Medicine, has been named head of the division of pathology, Hahnemann Medical College and Hospital, Philadelphia. Dr. Tedeschi, who came to America in 1939 from Italy where he had been professor of pathology at the University of Ferrara, served as a fellow in pathology at Yale University School of Medicine, New Haven, Conn., and at the Mt. Sinai Hospital, New York. He has been director of laboratories and research at the Framingham (Mass.) Union Hospital and consultant in pathology to the Framingham Heart Program of the U. S. Public Health Service as well as attending in pathology to the Veterans Administration Hospital.

MICHIGAN

Symposium on Blood.—The Wayne University College of Medicine, Detroit, announces that its third annual Symposium on Blood will be held Jan. 9 in the auditorium, 645 Mullett St., Detroit. Out-of-state physicians who will participate in the program include Joseph M. Hill, Dallas, Texas; Herbert S. Bowman, Robert T. Carroll, and Leandro M. Tocantins, Philadelphia; Benjamin Alexander, Robert Goldstein, Anne G. LeBolloc'h, Louis K. Diamond, and Wayne H. Borges, Boston; and Solomon Sherry, Cincinnati. Sir Lionel Whitby, vice-chancellor of Cambridge University in England and former president of the International Society of Hematology, will present "Some Quantitative Problems of Haemopoiesis."

Angus McLean Award.—The Academy of Surgery of Detroit offers the Angus McLean prize award of $200 for the best essay on a surgical problem submitted by a resident or an intern of a hospital in the greater Detroit area. The essay may cover either clinical or research investigations, must be original rather than a review of previous work, should not exceed 3,000 words, and must be typewritten, double-spaced, in

triplicate. The award will be made at the annual meeting of the academy at the Detroit Athletic Club, May 13, when the essay will be read. The essay may be submitted for publication to the journal of the author's choice. Manuscripts should be sent to the secretary, Dr. Howard T. Howlett, 868 Fisher Bldg., Detroit 2, not later than March 1.

Annual Rural Health Conference.—The seventh annual Michigan Rural Health Conference will be held Jan. 14-15 at the Bancroft Hotel, Saginaw. The central theme will be the health problems arising in Michigan as a result of industrial growth in small communities. Dr. John R. Rodgers, Bellaire, general chairman, points out that more than 400,000 Michigan people have moved from urban centers to rural areas during the past 10 years but are not farming. The Thursday morning session will include the address "The Influence Health Maintenance Programs in Industry Have on Community Health," by Dr. Max R. Burnell, medical consultant to General Motors Corporation, Detroit. A panel discussion with audience participation will be held Thursday, 1:30 p. m., and group discussions are scheduled at 3:15 p. m. on community sanitation, community health planning, rural and community safety, medical care facilities, and school health programs. At the banquet Thursday, 6:30 p. m., the Michigan Health Council will present its award to a public health person, the news article awards, and the Andrew S. Brunk award. The conference is financially sponsored by the Michigan Foundation for Medical and Health Education and cosponsored by more than 100 Michigan organizations. Registration fee is $1, and the annual banquet fee is $2.85 (tax included).

NEW YORK

Hospital News.—The St. Francis Sanatorium for Cardiac Children in Roslyn, Long Island, offers seminars in cardiovascular physiology and treatment of heart diseases in children, Jan. 12, Feb. 9, March 9, April 13, and May 11.

Dr. Adeline Wescott Honored.—On her 80th birthday, Nov. 17, Dr. Adeline M. Wescott participated in a panel discussion on diabetes at St. Luke's Hospital, Newburgh, which was followed by a surprise ceremony in her honor, at which telegrams of congratulations were received from Drs. Elliot P. Joslin, Boston, and Charles Best, Toronto, Canada. The board of managers of St. Luke's Hospital have named the laboratories, which Dr. Wescott originated and developed, the Adeline M. Wescott Laboratories.

District State Health Offices.—The Batavia District Office, New York State Department of Health, has been relocated at Lockport to serve the counties of Orleans and Niagara, exclusive of the City of Niagara Falls. The relocation was brought about by the establishment in Genesee County of a county health department. The new Niagara-Orleans district will come under the supervision of the Buffalo Regional Office of the state health department. Approval has been granted for the establishment of a Clinton County Health district, the necessary first step in setting up a county health department in Clinton County. The new county health department, the 16th in the state, was scheduled to begin operations Jan. 1.

New York City

Seminars in Hematology.—The Mount Sinai Hospital announces that the following seminars will be held in Blumenthal Auditorium (entrance through the hospital gardens, 5th Ave. & 100th St.) on Wednesdays at 8:30 p. m.:

Jan. 20, Fundamental Stimulus for Erythropoiesis, Walter S. Root, Ph.D., Columbia University College of Physicians and Surgeons, (discussion: Daniel Stats, Mount Sinai Hospital).

Feb. 17, Vitamin B_{12}, Folic Acid, and Citrovorum Factor: (a) Metabolic Aspects, Mr. Harry Broquist, Lederle Laboratories, Pearl River, N. Y.; (b) Clinical Aspects, Maurice Strauss, Veterans Administration Hospital, Boston.

March 17, Hemophilia: Panel Discussion, Benjamin Alexander, Harvard Medical School, Boston; Leandro M. Tocantins, Jefferson Medical College of Philadelphia, and Martin C. Rosenthal, Mount Sinai Hospital.

April 21, Advances in Knowledge of Hemolytic Anemia, Lawrence E. Young, University of Rochester School of Medicine and Dentistry, (discussion: Lawrence I. Schwartz, Mount Sinai Hospital).

Personal.—Dr. Herbert S. Kupperman has been promoted from research associate to adjunct assistant professor in therapeutics of the New York University College of Medicine. Before joining the staff of the university in 1947, Dr. Kupperman was with the University of Georgia School of Medicine, Augusta. ——Dr. I. Newton Kugelmass addressed the student body and faculty of the University of Montreal Faculty of Medicine, Dec. 1-2, 1953, on infant nutrition and control of hemorrhagic disorders in children.——Dr. Morris A. Jacobs has been appointed senior general medical superintendent of the municipal department of hospitals to succeed Dr. I. Herbert Scheffer, who retired from the department Nov. 1, 1953, to become executive director of Miriam Hospital in Providence, R. I. Dr. Jacobs has had 26 years of service in the department of hospitals.

OHIO

Memorial to Dr. Shank.—The University of Cincinnati has announced that the contemplated upper deck enlargement of the James Gamble Nippert Stadium will be known as the Reed A. Shank Pavilion, in tribute to the late Dr. Shank, a member of the board of directors of his alma mater, the University of Cincinnati. Dr. Shank died at the Miami-University of California football game in Nippert Stadium, Nov. 26, 1953.

Annual Academy Lectures.—In its annual series of monthly lectures the Fort Steuben Academy of Medicine, meeting in the Fort Steuben Hotel, Steubenville, Jan. 12, will hear "Behavior Disorders of Children" by Dr. Alexander A. Weech, Cincinnati. Physicians, interns, and graduate nurses are invited. Information may be obtained from Dr. Edward B. Weinman, secretary-treasurer, National Exchange Bank Building, Steubenville.

PENNSYLVANIA

Booklet on Cancer Detection.—The commission on cancer of the Medical Society of the State of Pennsylvania is distributing to commonwealth physicians a new booklet "Five Points for the Detection of Cancer," which outlines the procedure of an office examination to detect cancer. An examination, which can be done in a physician's office and by which most accessible cancers can be diagnosed, is being encouraged by the commission in cooperation with the Pennsylvania division of the American Cancer Society and the division of cancer control of the Pennsylvania State Department of Health. Distribution of the booklet is the first phase of a renewed large-scale effort to alert the profession and the public to the importance of early diagnosis and prompt treatment in cancer control. Dr. J. William White, Scranton, is chairman of the commission.

Philadelphia

Issue Dedicated to Perry Pepper.—The November issue of the *Medical Clinics of North America*, the Philadelphia Number, contains a symposium on clinical medicine from Philadelphia, with a dedicatory foreword to Dr. Oliver H. Perry Pepper, emeritus professor of medicine, University of Pennsylvania School of Medicine, Philadelphia, which reads in part: "The contributions contained in this volume represent the admiration, respect and affection in which you are held by those whom you have influenced during the 45 years of your professional life. Their name is legion."

Dr. McCall Goes to Louisiana.—Dr. Milton Lawrence McCall, assistant professor of obstetrics and gynecology, Jefferson Medical College, has been appointed professor of obstetrics and gynecology, Louisiana State University School of Medicine, New Orleans, and a visiting physician in obstetrics and gynecology at Charity Hospital of Louisiana, New Orleans. Dr. McCall, who will head the department, also served as associate chief of obstetrics and gynecology at Episcopal Hospital, adjunct in obstetrics and gynecology at Jefferson Medical College Hospital, and assistant visiting obstetrician and gynecologist at Philadelphia General Hospital.

University News.—Dr. Norbert J. Roberts, medical director of the Pennsylvania Railroad Company, has been named assistant professor of occupational medicine in the department of public health and preventive medicine, University of Pennsylvania School of Medicine, Philadelphia.——The Home of the Jewish Aged in Philadelphia has been affiliated with Hahnemann Medical College and Hospital of Philadelphia for the purpose of research in the problems of old age. Dr. Nathan Blumberg, medical director of the home, has been appointed professor of geriatrics at Hahnemann Medical College, and other physicians on the staff of the home will serve as faculty members at Hahnemann, specializing in geriatrics. Hahnemann senior medical students will study geriatrics at the home and serve as clinical clerks.——The Woman's Medical College of Philadelphia has received a $30,000 grant from the W. K. Kellogg Foundation of Battle Creek, for a program of teaching and research in preventive medicine. In August ground was broken for the $115,000 Martha Tracy Preventive Medicine Wing, a two-story unit to house the department, which is under the direction of Dr. Katharine R. Boucot, professor of preventive medicine.——Dr. Aims C. McGuinness, dean, Graduate School of Medicine of the University of Pennsylvania, announces that 84 physicians from 26 foreign countries are included in the total enrollment. Dr. Michael Harty, of Cambridge University, England, will be a visiting lecturer in anatomy at the school during the current year, and Dr. Francis J. W. Roughton, professor of colloid science at Cambridge University, England, will be a guest lecturer in physiology. Dr. Louis E. Silcox, professor of clinical otolaryngology, has been named chairman of the department of otolaryngology. He takes the place formerly held by Dr. Edward H. Campbell, who remains as a member of the faculty to carry out his full teaching schedule.

RHODE ISLAND

Physicians, Press, and Radio Cooperate.—The Rhode Island Medical Society has adopted a code of cooperation between physicians, the press, and radio in Rhode Island, whereby (1) the officers of the society or other representatives specifically designated agree to be available to the representatives of the press and radio to supply authentic information on matters pertinent to health and medicine; (2) officers, designated spokesmen, or committee chairmen of the Rhode Island Medical Society may be quoted by name in matters of public interest for the purpose of authenticating the given information; (3) publicity in the press and radio and other public media must be avoided by all members of the society except under such circumstances; (4) in case of illness of a person in whom the public has a legitimate interest the wishes of the attending physician or surgeon will be respected as to the use of his name; and (5) the society will encourage hospitals to have someone available at all times to deal with the representatives of the press and radio. The press and radio are requested (1) to quote accurately information by physicians and spokesmen for the medical societies and hospitals; (2) to avoid the use of material designed merely to exploit the doctor or hospital or patient; (3) to refrain from any demands that might jeopardize the patient's health or the patient-physician relationship; and (4) to obtain authentic information from qualified sources before the broadcasting or publication of such matters concerning members of the society.

VIRGINIA

New Faculty Members.—New members appointed to the faculty of the University of Virginia School of Medicine, Charlottesville, include Dr. Oscar A. Thorup Jr., assistant to the dean and instructor in internal medicine; assistant professors, Drs. Julian R. Beckwith (internal medicine) and Wilford A. H. Councill Jr., (pharmacology); instructors, Drs. Warren Gregory (pediatrics), A. Allen Humphries (anatomy), and Leroy S. Pearce (pathology); and Dr. Francis H. McGovern, Danville, clinical assistant professor of otolaryngology.

Society News.—The Virginia Radiological Society recently elected the following officers: Dr. Lawrence O. Snead, Richmond, president; Dr. W. Allen Barker, Roanoke, vice-president; and Dr. Philip B. Parsons, Norfolk, secretary-treasurer. ——The Virginia Orthopedic Society has elected Dr. Bernard D. Packer, Richmond, president, Dr. Allen M. Ferry, Arlington, vice-president, and Dr. William M. Deyerle, Richmond, secretary.——The Virginia Diabetic Association has elected Dr. Robert L. Bailey Jr., Richmond, president, Drs. Thomas S. Edwards, Charlottesville, and William A. Read, Newport News, vice-presidents, and Dr. James F. Conner, Kecoughtan, secretary-treasurer.——At a recent meeting of the Virginia Society of Obstetricians and Gynecologists Dr. Chester L. Riley, Winchester, was installed as president; Dr. Eugene S. Groseclose, Lynchburg, was named president-elect; and Dr. Chester D. Bradley, Newport News, was reelected secretary-treasurer.

WEST VIRGINIA

Society News.—At the annual meeting of the West Virginia Heart Association in Charleston, Nov. 6, 1953, Dr. Walter C. Swann, Huntington, was installed as president; Dr. Francis J. Gaydosh, Wheeling, president-elect; Dr. Richard N. O'Dell, Charleston, vice-president; Dr. William E. Bray Jr., Huntington, secretary; and Mr. Ronald E. Plott, Charleston, treasurer. The next annual meeting will be held in Huntington in November.

Personal.—Dr. Delivan A. MacGregor, Wheeling, has been named chairman of the West Virginia Board of Health for the two year term ending in August 1955.——Dr. Luke W. Frame, Huntington, director of the Huntington-Cabell-Wayne Health Department, has resigned to accept appointment as director of the Giles-Montgomery-Radford Health District in Virginia, where his headquarters are at 601 E. Main St., Christiansburg, Va.

Alumni Honor Gideon Dodds.—A portrait of Gideon S. Dodds, Ph.D., former chairman, committee on admissions and secretary of the faculty of West Virginia University School of Medicine, Morgantown, will be unveiled at 4 p. m., Jan. 15, in the Elizabeth Moore Hall. Dr. Edward J. Van Liere, dean of the school of medicine, will preside, and Dr. Simon B. Chandler, professor of anatomy, will give an appreciation of Dr. Dodds. The portrait will be presented by Dr. G. Ralph Maxwell, president of the Alumni Association of the school of medicine, and accepted by Irvin Stewart, Ph.D., president of the university. The gift was made possible through voluntary contributions by the alumni of the school of medicine.

WISCONSIN

Dr. Boucot to Speak on Cancer.—The University of Wisconsin Medical School, Madison, announces that Alpha Epsilon Iota will present the Katherine Howard Baird memorial lectureship, at 8 p. m., Jan. 13, in the auditorium, Service Memorial Institute. "Survey—Cancer of the Lung" will be given by Dr. Katharine R. Boucot, professor of preventive medicine, Woman's Medical College of Pennsylvania, Philadelphia.

Personal.—Dr. Gerald A. Fostvedt, Barron, was recently elected to the New York Academy of Science. Dr. Fostvedt is associated in medical practice with his wife, Dr. Lucille M. Radke Fostvedt.——Dr. Edwin N. Brown, Arena, was the honored guest of his townspeople at a community reception Oct. 10, 1953. A television set was presented in appreciation of his half century of service.——Dr. Robert T. McCarty, assistant professor of surgery at Marquette University School of Medicine, Milwaukee, recently won the annual award of the Piedmont Proctologic Society for the best research paper in the field of proctology. He presented his paper on cancer research in proctology at the national convention of the American Proctologic Society in Boston.

ALASKA

Hospital News.—At its annual fall meeting in Juneau the Alaska Board of Health approved use of federal funds available on a matching basis for hospital and health center buildings at Cordova, Glenallen, and Homer, the largest of the three being the Cordova project, in which the hospital building is to have 22 beds, as well as a health center. Total cost of this project will be $500,000.

GENERAL

Research Fellowship in Ophthalmology.—Information regarding a research fellowship in ophthalmology at Indiana University Medical Center may be obtained by writing to Dr. Theodore F. Schlaegel Jr., 1100 W. Michigan St., Indianapolis 7. For those who have not had a graduate course in ophthalmology, the fellowship will provide some training prior to a residency. Fellows assist in the eye clinic and at eye surgery and attend the formal classes for eye residents. The stipend is $1,800 per year plus room and laundry.

Psychiatric Endowment Fund.—The American Psychiatric Association has established an endowment fund for the support of projects which will advance mental health. Gifts to the fund will be used to study the nature, causes, treatment, and prevention of mental disorders, to raise standards of treatment and care for the mentally ill in hospitals, to further psychiatric education and research, and to make psychiatric knowledge useful to other branches of medicine, to other sciences, and to the public welfare. Secretary of the association is Dr. Robert F. Gayle Jr., 6300 Three Chopt Road, Richmond 21, Va.

Elisabeth Prentiss Award.—At the annual meeting of the Cleveland Health Museum's National Advisory Council in New York, Clair Elsmere Turner, Dr.P.H., received the 1953 Elisabeth S. Prentiss national award in health education, with a citation that read: "A true professor, master architect of school and adult health education, respected author, world-wide lecturer and consultant." Dr. Turner, assistant to the president of the National Foundation for Infantile Paralysis since 1946, is professor of public health emeritus, Massachusetts Institute of Technology, Cambridge, where he founded the public health department. He was public health consultant with the 1949 Overseas Consultants' Iranian Survey and directed a health education survey of the Arab states. He has been health education consultant with the World Health Organization for four years. He is now president of the Society of Public Health Educators.

Increase in Blindness Among Preschool Children.—The National Society for the Prevention of Blindness reports that blindness among American preschool children increased 47% between 1943 and 1950. The study points out that over 95% of blindness in preschool children takes place before the first birthday. According to Dr. Franklin M. Foote, New York, executive director of the society, most of this increase in blindness among young children is due to the alarming spread of retrolental fibroplasia. Dr. Foote reports that blindness from prenatal influences decreased from 12.9 cases per 100,000 children in 1943 to 8.5 in 1950; infectious diseases from 2 to 1; and injuries from 1.1 to 0.6; but that "retrolental fibroplasia jumped from 1.4 to 10.9." The National Society for the Prevention of Blindness is a nonprofit organization engaged in research, education, and service to conserve vision. It is supported entirely by voluntary contributors.

Society News.—At the annual meeting of the **National Association of State and Territorial Health Officers** Dr. Harold M. Erickson, Portland, Ore., was elected president, Dr. John D. Porterfield III, Columbus, Ohio, vice-president, and Dr. Franklin D. Yoder, Cheyenne, Wyo., secretary-treasurer.——At the annual meeting of the **Congress of Neurological Surgeons** in New Orleans, the following officers were elected: Dr. James R. Gay, White Plains, N. Y., president; Dr. Donald B. Sweeney, Birmingham, Ala., vice-president; and Dr. Bland W. Cannon, Memphis, Tenn., reelected secretary-treasurer.——Drs. Jack Masur and Vane M. Hoge, assistant surgeons general, U. S. Public Health Service, were hosts to the **American Association of Hospital Consultants** when it met in Bethesda, Md., in December to study the extensive facilities of the new clinical center of the National Institutes of Health of the U. S. Public Health Service. Dr. E. Michael Bluestone, New York, president of the association, presided. A symposium, "Radioisotopes in Hospitals," was presented, and papers were read on acoustics in hospitals and modern hospital architecture. The following officers were elected: Dr. G. Harvey Agnew, Toronto, Canada, president; Dr. Jack Masur, Washington, D. C., vice-president; Mr. Jacque Norman, Greenville, S. C., secretary-treasurer; and Drs. E. Michael Bluestone, New York, and Charles F. Wilinsky, Boston, executive members.

New Food and Beverage Sanitation Council.—A nationwide, program for better health through food and beverage sanitation was initiated at a meeting Dec. 1-3, 1953, at the offices of the National Sanitation Foundation, Ann Arbor, Mich., under the joint auspices of the National Sanitation Foundation, the National Restaurant Association, and the U. S. Public Health Service. The program undertaken will be the work of a national voluntary committee, the National Industry-Health Council on Food and Beverage Sanitation, which includes Drs. Vlado A. Getting, Boston, and John D. Porterfield III, Columbus, Ohio. The purpose of the new council was announced as "the development and promotion of agreed principles for the protection of health; and the voluntary coordination of the efforts of industry, health agencies and the public in the betterment of food and beverage service and the environmental sanitation conditions surrounding such services in the home, at public and private establishments throughout the community." The program will emphasize the necessity of public awareness as to the benefits of food protection and cleanliness in schools, hospitals and other institutions, and in the home. A series of pilot studies in various communities is being planned to determine the effectiveness of all elements of the program. The results of these tests and studies will be made available to all communities for advancement of local health programs.

Annual Conference on Protein Metabolism.—Serological approaches to studies of protein structure and metabolism will be discussed at the 10th annual Conference on Protein Metabolism at Rutgers University, the State University of New Jersey, New Brunswick, Jan. 29-30. The sessions will begin at 2 p. m. Friday in Van Dyck Hall, where "Proteins as Antigens and Antibodies" will be presented by Dr. Felix Haurowitz, Indiana University, Bloomington, and "The Precipitin Reaction and Studies of Native and Denatured Proteins and Derivatives," by Michael Heidelberger, Ph.D., Columbia University. Dinner, 6 p. m. at University Commons, will precede the evening meeting at which Dr. David Gitlin, Harvard University, Boston, will discuss "Light Scattering and Ultracentrifugation Methods in Studies of Precipitin Systems and Their Application to Human Metabolism," after which "Immunological Analysis of the Biosynthesis of a Protein" will be presented by Melvin Cohn, Institut Pasteur. On Saturday at 10 a. m., J. Munoz of Sharp & Dohme will speak on the use and limitations of serum agar techniques in studies of proteins. At 11 a. m. Alan A. Boyden, Ph.D., Rutgers University, will discuss "Measurement and Significance of Serological Correspondence among Proteins." The registration fee of $3 (payable to Rutgers University) should be sent before Jan. 16 to Prof. William H. Cole, Ph.D., Rutgers University, New Brunswick, N. J.

LATIN AMERICA

Camp Lazear Dedicated.—Camp Lazear, Quemados de Marianao, Cuba, the experimental site associated with Dr. Walter Reed and the U. S. Army Commission in their research on yellow fever, was recently dedicated. The camp is named for Dr. Jesse W. Lazear who died of yellow fever during these experiments. The camp site, located in an isolated area, about one mile from Camp Columbia, which is close to Havana, was abandoned after completion of the experiments, and another location nearer to Camp Columbia was later assumed to be the original site. Dr. Philip S. Hench of the Mayo Clinic, Rochester, Minn., recently discovered the original camp and found there one of the two experimental buildings used by Dr. Reed and the commission. The camp has been reconstructed, and a small park has been established there.

CORRECTIONS

Postgraduate Courses.—In the listing of postgraduate courses published in the Dec. 12, 1953 issue of THE JOURNAL, the course given by Columbia University College of Physicians and Surgeons entitled "Hematology, Medicine PM 67-Advanced Hematology" was incorrectly listed as being given at Mt. Sinai Hospital. The course is given at Montefiore Hospital. In the same listing, the course in exfoliative cytology listed under the heading of "Malignant Diseases" gave incorrect dates. This course extends from March 1 to May 28, 1954.

Oral Dose of Quinacrine—Food and Drug Administration.—In THE JOURNAL, Nov. 28, 1953, page 1172, in the article entitled "Fatal Aplastic Anemia Following Quinacrine Therapy in Chronic Discoid Lupus Erythematosus," in the first line of the second paragraph, under Report of Case, the dose of quinacrine given orally twice a day should have been 0.1 gm. instead of 1 gm.

In the first footnote at the bottom of this page, the parentheses containing Dr. Sawitsky's name were added by mistake and should have been omitted.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 22-24, 1954. Sec., Dr. D. G. Gill, 537 Dexter Ave., Montgomery.

DELAWARE: Dover, Jan. 12-14, 1954. Sec., Dr. Joseph S. McDaniel, 229 South State St., Dover.

GUAM: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Director of Medical Services, Guam Memorial Hospital, Agana

HAWAII: Honolulu, Jan. 11-14. *Examination.* Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

IDAHO: Boise, Jan. 11-13, 1954. Executive Secretary, Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

ILLINOIS: *Examination and Reciprocity.* Chicago, Jan. 26-28; April 6-8; June 22-24, and Oct. 5-7. Supt. of Registration, Mr. Fredric B. Selcke, Capitol Bldg., Springfield.

INDIANA: *Examination.* Indianapolis, June 16-18. Exec. Sec., Miss Ruth V. Kirk, 538 K of P Bldg., Indianapolis.

MAINE: *Examination and Reciprocity.* Portland, March 9-10. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MASSACHUSETTS: *Examination.* Boston, Jan. 12-15. Sec., Dr. Robert C. Cochrane, Room 37, State House, Boston 33.

MICHIGAN:* *Examination.* Detroit and Ann Arbor, June 1954. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing 8.

MONTANA: *Reciprocity.* Helena, April 5. *Examination.* Helena, April 6-7. Sec., Dr. S. A. Cooney, 214 Power Block, Helena.

NEBRASKA:* *Examination.* Omaha, June 1954. Director, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln.

NEVADA:* *Examination and Reciprocity.* Reno, Jan. 6. Sec., Dr. George H. Ross, 112 Curry St., Carson City.

NEW HAMPSHIRE: *Examination and Reciprocity.* Concord, March 10. Sec., Dr. John S. Wheeler, 107 State House, Concord.

NEW MEXICO:* *Examination and Reciprocity.* Santa Fe, April 12-13. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

NEW YORK: *Examination.* Albany, Buffalo, Syracuse and New York City, Feb. 16-19. Sec., Dr. Stiles D. Ezell, 23 S. Pearl St., Albany.

NORTH CAROLINA: *Reciprocity.* Winston-Salem, Jan. 18. Sec., Dr. Joseph J. Combs, 716 Professional Bldg., Raleigh.

OKLAHOMA:* *Examination.* Oklahoma City, June 9-10. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

PENNSYLVANIA: *Examination.* Philadelphia, January 1954. Acting Secretary, Mrs. Margaret G. Steiner, Box 911, Harrisburg.

RHODE ISLAND:* *Examination.* Providence, Jan. 7-8. Admin. of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence

SOUTH CAROLINA: *Reciprocity.* Columbia, Feb. 1. Sec., Mr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA:* *Examination.* Sioux Falls, Jan. 19-20, 1954. Reciprocity can be obtained at any time between meetings of board. Executive Secretary, Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TEXAS: *Examination and Reciprocity.* Fort Worth, June 21-23. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Ft. Worth 2.

VERMONT: *Examination.* Burlington, Feb. 1954. Sec., Dr. F. J. Lawliss, Richford.

WASHINGTON:* *Examination.* Seattle, Jan. 10-13. *Reciprocity.* Seattle, Jan. 10. Sec., Mr. Edward C. Dohm, Department of Licenses, Olympia.

WEST VIRGINIA: *Examination and Reciprocity.* Charleston, Jan. 11-13. Sec., Dr. N. H. Dyer, State Office Bldg., Charleston 5.

WISCONSIN:* *Examination and Reciprocity.* Madison, Jan. 12-14, 1954. Sec., Dr. A. G. Koehler, 46 Washington Blvd., Oshkosh.

WYOMING: *Oral Examination and Reciprocity.* Cheyenne, Feb. 1. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: On application. Juneau or other towns in Territory as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

CONNECTICUT: *Examination.* New Haven, Feb. 13. Address: State Board of Healing Arts, 52 Whitney Ave., New Haven 10.

IOWA: *Examination.* Des Moines, Jan. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MICHIGAN: *Examination.* Detroit and Ann Arbor, Feb. 12-13. Sec., Mrs. Anne Baker, 410 W. Allegan St., Lansing 15.

NEW MEXICO: *Examination.* Santa Fe, Jan. 17. Sec., Miss Marguerite K. Cantrell, Box 1522, Santa Fe.

OKLAHOMA: *Examination.* Oklahoma City, April 16-17. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination.* Portland, March 6, June 5, Sept. 11 and Dec. 4. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

TEXAS: *Examination.* April 1954. Location determined by number of applicants from different sections of the state. Sec., Brother Raphael Wilson, C.S.C., 407 Perry-Brooke Bldg., Austin.

WISCONSIN: *Examination.* Madison, April 3 and June 5. Final date for filing application is March 26 and May 28. Sec., Dr. W. H. Barber, 621 Ransom St., Ripon.

*Basic Science Certificate required.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1954 Annual Meeting, San Francisco, June 21-25.

1954 Clinical Meeting, Miami, Florida, Nov. 30-Dec. 3.

1955 Annual Meeting, Atlantic City, N. J., June 6-10.

1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.

1956 Annual Meeting, Chicago, June 11-15.

ANNUAL CONGRESS ON INDUSTRIAL HEALTH, Brown Hotel, Louisville, Ky., Feb. 24-25. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE, Palmer House, Chicago, Feb. 7-9. Dr. Edward L. Turner, 535 N. Dearborn St., Chicago 10, Secretary.

NATIONAL CONFERENCE ON RURAL HEALTH, Baker Hotel, Dallas, Texas, Mar. 4-6. Mrs. Arline Hibbard, 535 N. Dearborn St., Chicago 10, Secretary.

AMERICAN ACADEMY OF ALLERGY, Shamrock Hotel, Houston, Texas, Feb. 1-3. Dr. Alan G. Cazort, 1425 West 7th St., Little Rock, Ark., Secretary.

AMERICAN ACADEMY OF FORENSIC SCIENCES, Drake Hotel, Chicago, Feb. 25-27 Prof. Ralph F. Turner, Michigan State College Dept. of Police Administration, East Lansing, Mich., Secretary.

AMERICAN ACADEMY OF OCCUPATIONAL MEDICINE, John Marshall Hotel, Richmond, Va., Feb. 11-12. Dr. Leonard J. Goldwater, 600 W. 168th St., New York 32, Secretary.

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS, Palmer House, Chicago, Jan. 23-28. Dr. John R. Norcross, 122 S. Michigan Blvd., Chicago 3, Secretary.

AMERICAN COLLEGE OF RADIOLOGY, Drake Hotel, Chicago, Feb. 5. Mr. William C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

AMERICAN FEDERATION FOR CLINICAL RESEARCH:

SOUTHERN SECTION, Jung Hotel, New Orleans, Jan. 29. Dr. William Parson, University of Virginia School of Medicine, Charlottesville, Va., Chairman.

WESTERN SECTION, Auditorium, University of Oregon Medical School, Portland, Ore., Jan. 28. Dr. I. S. Edelman, University of California Medical Center, San Francisco Hospital, San Francisco 15, Secretary.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY:

MIDDLE SECTION, Park Plaza Hotel, St. Louis, Jan. 18. Dr. French K. Hansel, 634 N. Grand Blvd., St. Louis, Chairman.

SOUTHERN SECTION, Brown Hotel, Louisville, Ky., Jan. 16. Dr. William C. Wolfe, 1012 Heyburn Bldg., Louisville 2, Ky., Chairman.

WESTERN SECTION, University of Oregon Medical School, Portland, Ore., Feb. 6. Dr. Guy L. Boyden, 1735 N Wheeler Ave., Portland 12, Ore., Chairman.

AMERICAN ORTHOPSYCHIATRIC ASSOCIATION, Hotel New Yorker, New York, Feb. 11-13 Dr. Marion F. Langer, Room, 303 Lexington Ave., New York 16, Secretary.

AMERICAN PROTESTANT HOSPITAL ASSOCIATION, Palmer House, Chicago, Feb. 10-12. Mr. Albert G. Hahn, Protestant Deaconess Hospital, Evansville, Ind., Executive Secretary.

AMERICAN SOCIETY FOR SURGERY OF THE HAND, Palmer House, Chicago, Jan. 22. Dr. George V. Webster, 960 East Green St., Pasadena 1, Calif., Secretary.

CENTRAL SURGICAL ASSOCIATION, Statler Hotel, Detroit, Feb. 18-20. Dr. Robert M. Zollinger, University Hospital, Columbus 10, Ohio, Secretary.

CHICAGO MEDICAL SOCIETY ANNUAL CLINICAL CONFERENCE, Palmer House, Chicago, March 2-5. Dr. Maurice M. Hoeltgen, 86 East Randolph St., Chicago, Secretary.

MID-SOUTH POST GRADUATE MEDICAL ASSEMBLY, Hotel Peabody, Memphis, Tenn., Feb. 9-12. Dr. Thurman Crawford, 869 Madison Ave., Memphis, Tenn., Secretary.

NATIONAL CONFERENCE ON TRICHINOSIS, A. M. A. Headquarters, Chicago, March 1. Dr. S. E. Gould, Wayne County General Hospital, Eloise, Mich., Chairman.

NORTHWEST SOCIETY FOR CLINICAL RESEARCH, Portland, Ore., Jan. 28. Dr. Arthur L. Rogers, 1216 S.W. Yamhill St., Portland, Ore., Secretary.

REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS:

EASTERN PENNSYLVANIA, Philadelphia, Jan. 15. Dr. Thomas M. McMillan, 330 S. Ninth St., Philadelphia 7, Governor.

SECTIONAL MEETINGS, AMERICAN COLLEGE OF SURGEONS:

CHARLOTTE, N. C., Hotel Charlotte, Feb. 1-3. Dr. Thomas D. Sparrow, 403 North Tryon St., Charlotte 2, N. C., Chairman.

RENO, NEV., Riverside Hotel, Feb. 25-26. Dr. Kenneth F. Maclean, 120 N. Virginia St., Reno, Nev., Chairman.

OMAHA, NEB., Hotel Fontenelle, March 1-4. Dr. Earl A. Connolly, 107 South 17th St., Omaha, Chairman.

SOCIETY OF UNIVERSITY SURGEONS, Sheraton Hotel, Rochester, N. Y., Feb. 11-13. Dr. C. Rollins Hanlon, 1325 South Grand Blvd., St. Louis, Secretary.

WESTERN SOCIETY FOR CLINICAL RESEARCH, Portland, Ore., Jan. 29-30. Dr. Herbert N. Hultgren, Stanford Hospital, San Francisco 15, Secretary.

FOREIGN

ASSOCIATION OF SURGEONS OF GREAT BRITAIN AND IRELAND, Leeds, England, May 13-15, 1954. Dr. Henry W. S. Wright, 45 Lincoln's Inn Fields, London W.C.2, England, Honorary Secretary.

BRITISH MEDICAL ASSOCIATION, Glasgow, Scotland, July 1-9, 1954. Dr. A. Macrae, B.M.A. House, Tavistock Square, London, W.C.1, England, Secretary.

CANADIAN MEDICAL ASSOCIATION, Vancouver, B. C., Canada, June 14-18, 1954. Dr. T. C. Routley, 244 St. George St., Toronto 5, Ont., Canada, General Secretary.

CONFERENCE OF INTERNATIONAL UNION AGAINST TUBERCULOSIS, Madrid, Spain, Sept. 26-Oct. 2, 1954. Secretariat, Escuela de Tisiologia, Ciudad Universitaria, Madrid, Spain.

CONGRESS OF INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Los Angeles, Calif., U. S. A., Oct. 4-7, 1954. For information write: Dr. T. H. Seldon, 102-110 Second Avenue S. W., Rochester, Minn., U. S. A.

CONGRESS OF INTERNATIONAL ASSOCIATION FOR THE PREVENTION OF BLINDNESS, New York, N. Y., U. S. A., Sept. 12-17, 1954. Professor Franceschetti, 2 Avenue Mirmot, Geneva, Switzerland, Secretary-General.

CONGRESS OF INTERNATIONAL SOCIETY OF SURGERY, Paris, France, May 21-22, 1954. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, General Secretary.

HEALTH CONGRESS OF THE ROYAL SANITARY INSTITUTE, Scarborough, England, April 27-30. Mr. P. Arthur Wells, Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W.1, England, Secretary.

INTERNATIONAL CANCER CONGRESS, Sao Paulo, Brazil, July 23-29, 1954. Prof. A. Prudente, 171 rua Benjamin Constante, Sao Paulo, Brazil, President.

INTERNATIONAL CONFERENCE ON THROMBOSIS AND EMBOLISM, Basle, Switzerland, July 15-19, 1954. Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

INTERNATIONAL CONGRESS ON CHILD PSYCHIATRY, University of Toronto, Toronto, Ontario, Canada, Aug. 13-14, 1954. Miss Helen Speyer, International Association for Child Psychiatry, 1790 Broadway, New York 19, New York, U. S. A., Executive Officer.

INTERNATIONAL CONGRESS OF CLINICAL PATHOLOGY, Washington, D. C., U. S. A., Sept. 6-10, 1954. Dr. Robert A. Moore, Washington University School of Medicine, St. Louis 10, Missouri, U. S. A., Chairman, Committee on Arrangements.

INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST, Barcelona, Spain, Oct. 4-8, 1954 Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Illinois, Executive Secretary.

INTERNATIONAL CONGRESS ON GROUP PSYCHOTHERAPY, Toronto, Ont., Canada, Aug. 12-14, 1954. Dr. J. L. Moreno, Room 327, 101 Park Ave., New York 17, N. Y., U. S. A., Director of Organizing Committee.

INTERNATIONAL CONGRESS OF HEMATOLOGY, Paris, Sept. 6-11, 1954. Dr. Jean Bernard, 86 rue d'Assas, Paris 6e, France, Secretary.

INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE, Rome and Salerno, Italy, Sept. 13-20, 1954. For information write: Segreteria XIV Congresso Internazionale di Storia della Medicina, Instituto di Storia della Medicine, Citta Universitaria, Rome, Italy.

INTERNATIONAL CONGRESS OF HYDROCLIMATISM AND THALASSOTHERAPY, Dubrovnik, Yugoslavia, May 8-16, 1954. Prof. C. Plavsic, Zeleni venac 1, Belgrade, Yugoslavia, Secretary General.

INTERNATIONAL CONGRESS OF INDUSTRIAL MEDICINE, Naples, Italy, Sept. 13-19, 1954. Professor Scipione Caccuri, Director, Institute of Industrial Medicine Policlinico, Naples, Italy, Chairman, Organizing Committee.

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Stockholm, Sweden, Sept. 15-18, 1954. Professor Anders Kristenson, Karolinska Sjukhuset, Stockholm 60, Sweden, Secretary-General.

INTERNATIONAL CONGRESS OF INTERNATIONAL COLLEGE OF SURGEONS, São Paulo, Brazil, April 26-May 2, 1954. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U. S. A., Secretary-General.

INTERNATIONAL CONGRESS ON MENTAL HEALTH, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

INTERNATIONAL CONGRESS OF NUTRITION, Amsterdam, Netherlands, Sept. 14-18, 1954. For information write: Dr. M. van Eekelen, Centraal Instituut voor Voedingsonderzoek T.N.O., 61 Catharynesingel, Utrecht, Netherlands.

INTERNATIONAL CONGRESS ON OBSTETRICS AND GYNECOLOGY, Geneva, Switzerland, July 26-31, 1954. Dr H. de Watteville, Maternité Hôpital Cantonal, Geneva, Switzerland, President.

INTERNATIONAL CONGRESS OF OPHTHALMOLOGY, University of Montreal and McGill University, Montreal, Canada, Sept. 10-11, 1954, and Waldorf-Astoria, New York, N. Y., U. S. A., Sept. 12-17, 1954. Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minnesota, U. S. A., Secretary-General.

INTERNATIONAL CONGRESS OF ORTHOPEDIC SURGERY AND TRAUMATOLOGY, Berne, Switzerland, Aug. 30-Sept. 3, 1954. For information write: Professor M. Dubois, Isle-Hospital, Berne, Switzerland.

INTERNATIONAL CONGRESS OF PSYCHOLOGY, Montreal, Canada, June 7-12, 1954. For information write: Prof. H. S. Langfeld, International Union of Scientific Psychology, Eno Hall, Princeton University, Princeton, N. J., U. S. A.

INTERNATIONAL CONGRESS FOR PSYCHOTHERAPY, Zurich, Switzerland, July 21-24, 1954. Dr. H. K. Fierz, Theaterstrasse 12, Zurich 1, Switzerland, Secretary General.

INTERNATIONAL GERONTOLOGICAL CONGRESS, London and Oxford, England, July 12-22, 1954. Prof. R. E. Tunbridge, General Infirmary, Department of Medicine, The University, Leeds, England, President.

INTERNATIONAL POLIOMYELITIS CONGRESS, Rome, Italy, Sept. 6-10, 1954. Mr. Stanley E. Henwood, 120 Broadway, New York 5, N. Y., U. S. A., Executive Secretary.

INTERNATIONAL SOCIETY OF BLOOD TRANSFUSION, Paris, France, Sept. 12-19, 1954. For information write: Colonel Julliard, Société Internationale de Transfusion Sanguine, 53 Boulevard Diderot, Paris 12e, France.

INTERNATIONAL SOCIETY FOR CELL BIOLOGY, Leiden, Netherlands, Sept. 2-9, 1954. Professor Peter J. Gaillard, University of Leiden, Leiden, Netherlands, Secretary.

INTERNATIONAL SOCIETY OF GEOGRAPHICAL PATHOLOGY, Washington, D. C., U. S. A., Sept. 6-10, 1954. Professor Fred C. Roulet, Hebelstrasse 24, Basle, Switzerland, Secretary-General.

JOURNEES MEDICALES, Paris, France, April 21-25, 1954. For information write: Secretariat of the Journees, 12, rue Pierre-Geofroix, Colombes (Seine) France.

LATIN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY, Caracas, Venezuela, Feb. 21-25, 1954. Dr. Victorino Marquez Reveron, Centro, Medico, Caracas, Venezuela, Secretary-General.

LATIN AMERICAN CONGRESS OF PHYSICAL MEDICINE, Medellin, Columbia, South America, Feb. 15-20, 1954. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York 21, N. Y., U. S. A., Executive Director.

PAN AMERICAN CONGRESS OF OPHTHALMOLOGY (Interim), São Paulo, Brazil, June 17-21, 1954. Dr. Moacyr E. Alvaro, São Paulo, Brazil, President.

PAN AMERICAN CONGRESS OF OTORHINOLARYNGOLOGY AND BRONCHOESOPHAGOLOGY, Mexico, D.F., Mexico, Feb. 28-March 4, 1954. Dr. Maximo Garcia Castañeda, Humboldt 17, Mexico 1, D.F., Mexico, Secretary-General.

PAN AMERICAN MEDICAL ASSOCIATION, International Medical Cruise Congress, S. S. Nieuw Amsterdam, Jan. 6-22, 1954. Dr. Joseph J. Eller, 745 Fifth Avenue, New York 22, N. Y., U. S. A., Executive Director.

PAN-PACIFIC SURGICAL CONGRESS, Honolulu, Hawaii, Oct. 7-18, 1954. Dr. F. J. Pinkerton, Suite 7, Young Bldg., Honolulu 13, Hawaii, Director General.

SECTIONAL MEETING, AMERICAN COLLEGE OF SURGEONS, London, England, May 17-19, 1954. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Ill., U. S. A., Secretary.

SOUTH AMERICAN CONGRESS OF ANGIOLOGY, Sao Paulo, Brazil, July 1954. For information write: Dr. Rubens Carlos Mayall, Rua Senador Vergueiro 73, Rio de Janeiro, Brazil, S. A.

WORLD CONGRESS OF CARDIOLOGY, Washington, D. C., and Bethesda, Md., U. S. A., Sept. 12-17, 1954. Dr. L. W. Gorham, 44 East 23d St., New York 10, N. Y., U. S. A., Secretary-General.

WORLD CONGRESS OF INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, Scheveningen-The Hague, Netherlands, Sept. 13-17, 1954. Secretariat: Miss H. P. Post, Pieter Lastmarkade 37, Amsterdam Z, Netherlands.

WORLD FEDERATION OF OCCUPATIONAL THERAPISTS, Edinburgh, Scotland, August 17, 1954.

WORLD MEDICAL ASSOCIATION, Rome, Italy, Sept. 26-Oct. 2, 1954. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary-General.

DEATHS

Tice, Frederick ⊕ Chicago; born near Oshkosh, Wis., July 30, 1871; Rush Medical College, Chicago, 1894; from 1901 to 1905 assistant professor of diseases of the chest and from 1905 to 1918 professor of diseases of the chest at the College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, now known as the University of Illinois College of Medicine, where he was later professor of medicine and head of the department, and clinical professor of medicine emeritus; formerly clinical professor of medicine at his alma mater; an Associate Fellow of the American Medical Association; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians, of which he was formerly vice-president; member of the American Congress on Internal Medicine, Institute of Medicine, Chicago Society of Internal Medicine, Society of Medical History, and the Chicago Tuberculosis Society; for many years attending physician and president of attending staff, Cook County Hospital, where a library has been named in his honor at the Dr. Karl A. Meyer Hall; past president of the board of directors of the City of Chicago Municipal Tuberculosis Sanitarium; served on the attending staff in West Suburban Hospital in Oak Park, Ill., MacNeal Memorial Hospital in Berwyn, Ill., Norwegian American Hospital, Wesley Memorial Hospital, and Mother Cabrini Hospital; editor-in-chief of Tice's "Practice of Medicine"; died in Columbus Hospital, Dec. 18, aged 82, of cardiac decompensation and arteriosclerotic heart disease.

Dunbar, Arthur White ⊕ Rear Admiral, U. S. Navy, retired, Severna Park, Md.; born in Cannon Falls, Minn., Sept. 7, 1869; University of California Medical School, San Francisco, 1891; commissioned an assistant surgeon in the Medical Corps of the U. S. Navy on Oct. 10, 1894; promoted to assistant surgeon on Oct. 10, 1897, to surgeon, March 3, 1903, to medical inspector with the rank of commander Aug. 29, 1916, to medical director with the rank of captain Jan. 1, 1918, and to rear admiral (MC), April 18, 1932, to rank from Dec. 7, 1926; while serving with the U. S. S. San Francisco, participated in the blockade of Havana, Cuba, in the Spanish-American War; as commanding officer of the U. S. S. Relief, made the world cruise with the Great White Fleet; during World War I commanded the hospital ships, U. S. S. Comfort and Repose; during his nearly 39 years of naval service, served in the U. S. Ships Resolute, Newark, Monongahela, Wyoming, California, Tennessee, and Missouri; commanded the Naval hospitals in Philadelphia and Annapolis, Md.; twice served as inspector of East Coast Naval Medical Department activities; assistant chief of the Navy's Bureau of Medicine and Surgery from April, 1925 to June, 1927; placed on the retired list of officers of the Navy on Oct. 1, 1933; fellow of the American College of Surgeons and the American College of Physicians; died in the Naval Hospital, Philadelphia, Nov. 6, aged 84, of bronchopneumonia.

Shank, Reed Albert ⊕ Cincinnati; born in Rawson, Ohio, March 6, 1893; University of Cincinnati College of Medicine, 1916; served during World War I; chairman of the athletic committee of the board of directors of the University of Cincinnati; formerly team physician for the Cincinnati Reds Baseball Club; affiliated with Good Samaritan, Children's, and Christ hospitals; the University of Cincinnati announced that the contemplated upper deck enlargement of the University of Cincinnati's James Gable Nippert Stadium will be known as the Reed A. Shank Pavilion in tribute to him; died suddenly Nov. 26, aged 60, of coronary disease, while watching the annual Cincinnati-Miami (Ohio) University football game.

Guy, William Harvey ⊕ Pittsburgh; born in Holt, Pa., March 24, 1887; University of Pittsburgh School of Medicine, 1910; professor emeritus of dermatology at his alma mater; specialist certified by the American Board of Dermatology and Syphilology; member of the American Dermatological Association, of which he was formerly director and president, and the American Academy of Dermatology and Syphilology; past president of the Allegheny County Medical Society and the Pittsburgh Dermatological Society; served during World War I; member of the staffs of Braddock (Pa.) Hospital, South Side, Allegheny General, Presbyterian, Woman's Eye and Ear, and Elizabeth Steel Magee hospitals; died Nov. 13, aged 66, of metastatic carcinoma of the liver.

Calhoun, Orange Van ⊕ Lincoln, Neb.; born in Birmingham, Iowa, Feb. 6, 1901; Western Reserve University School of Medicine, Cleveland, 1932; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; president of the Lancaster County Medical Society; president of the Lancaster Tuberculosis Association; past president of the Lincoln-Lancaster Health Department; formerly member of the school board; served during World War II; affiliated with Veterans Administration Hospital and the Lincoln General Hospital, where he died Nov. 2, aged 52, of coronary occlusion.

Delehanty, Edward ⊕ Denver; born in 1867; Colorado School of Medicine, Boulder, 1895; member of the American Psychiatric Association and the Central Neuropsychiatric Association; member of the House of Delegates of the American Medical Association in 1932; past president of the Colorado State Medical Society and Denver City and County Medical Society; professor emeritus of neurology at his alma mater, now known as University of Colorado School of Medicine; affiliated with Colorado General, Mercy, and National Jewish hospitals and St. Joseph's Hospital, where he died Nov. 4, aged 85, of coronary thrombosis.

Baker, James Adolph, Gaston, Ore.; Denver College of Medicine, 1891; for many years mayor; formerly practiced in Florence, Colo., where he was coroner of Fremont County; died in the Good Samaritan Hospital in Portland Nov. 7, aged 87, of myocardial infarction and diabetes mellitus.

Bouvier, John Joseph ⊕ Whitinsville, Mass.; Georgetown University School of Medicine, Washington, D. C., 1932; on the staff of the Whitinsville Hospital; for many years chairman of the school board; died in Phillips House, Massachusetts General Hospital, Boston, Nov. 13, aged 47.

Brown, Chester T., New Brunswick, N. J.; Johns Hopkins University School of Medicine, Baltimore, 1907; past president of the Association of Life Insurance Medical Directors of America; member of the Industrial Medical Association; retired in 1947 as medical director for the Prudential Insurance Company in Newark; past president of the Highland Park Library Board; died in Dufur Hospital in Ambler, Pa., Nov. 11, aged 71, of a cerebral vascular accident.

Campbell, Frank Dillon ⊕ Coal Grove, Ohio; Miami Medical College, Cincinnati, 1894; died in Athens Nov. 6, aged 86, of agranulocytic angina.

Carlisle, George Lawson ⊕ Dallas, Texas; Southern Methodist University Medical Department, Dallas, 1914; served on the faculty of Baylor University College of Medicine and Southwestern Medical School of the University of Texas; past president of the Dallas County Medical Society; died Nov. 2, aged 62, of coronary occlusion.

Cheney, William Henry, Signal Mountain, Tenn.; University of Chattanooga Medical Department, 1909; manager, secretary, and treasurer of the Natural Gas Service Company; once a member of the state game and fish commission; for many years chairman of the county board of health, and county physician; died in the Memorial Hospital Nov. 3, aged 81, of coronary occlusion.

⊕ Indicates Member of the American Medical Association.

Cloyd, Augustus David ⊕ Omaha; University of Nebraska College of Medicine, Omaha, 1926; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; associate in internal medicine at his alma mater; died Nov. 9, aged 55.

Cooke, Thomas Sanford, Portsmouth, Va.; University of Virginia Department of Medicine, Charlottesville, 1905; affiliated with King's Daughters' Hospital and the Maryview Hospital; died Nov. 15, aged 72, of coronary occlusion.

Cooley, James Allen ⊕ Brooklyn; Cornell University Medical College, New York, 1908; affiliated with Swedish Hospital, where he died Nov. 9, aged 68, of coronary thrombosis.

Crawford, James Harry ⊕ Watertown, S. D.; Rush Medical College, Chicago, 1901; served during World War I; died Sept. 13, aged 76, of coronary occlusion.

Cutchin, Ashley P., ⊕ Franklin, Va.; Medical College of Virginia, Richmond, 1897; died Nov. 7, aged 79, of cerebral hemorrhage.

Dembrow, William Louis ⊕ Silver Spring, Md.; Medical College of Virginia, Richmond, 1918; served during World Wars I and II; affiliated with the Veterans Administration; died Nov. 1, aged 64, of congestive heart failure.

Dotson, Donald Clark ⊕ Owingsville, Ky.; University of Louisville School of Medicine, 1932; died in the Good Samaritan Hospital, Lexington, recently, aged 48, of cardiovascular disease and malignant hypertension.

Frutig, Harold Carl, North Bergen, N. J.; University and Bellevue Hospital Medical College, New York, 1938; affiliated with North Hudson Hospital in Weehawken, and Christ Hospital in Jersey City; died Nov. 16, aged 39, of chronic myocarditis and thrombophlebitis.

Gibson, Thomas Archer ⊕ Winchester, Va.; University of Pennsylvania School of Medicine, Philadelphia, 1928; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; served during World War II; president of the staff of the Winchester Memorial Hospital, where he died Nov. 2, aged 53, of coronary disease.

Hodgson, Philip Morton ⊕ Bay Minette, Ala.; Atlanta Medical College, 1889; for many years a member of the state legislature; served as county health officer; died Nov. 5, aged 88, of nephritis.

Holabach, Philip Jacob ⊕ Palouse, Wash.; University of Cincinnati College of Medicine, 1936; member of the American Academy of General Practice; served as county health officer; died in the Memorial Hospital, Pullman, Nov. 10, aged 44.

Hubert, Gilbert Richard ⊕ Torrington, Conn.; Yale University School of Medicine, New Haven, 1935; certified by the National Board of Medical Examiners; fire department physician; served during World War II; died in the Grace-New Haven Hospital in New Haven, Oct. 28, aged 46.

Johnson, Earl Emerson ⊕ Covington, Ind.; Kansas City (Mo.) Hahnemann Medical College, 1911; died Nov. 4, aged 68, of heart failure.

Leibow, Louis Manual ⊕ New York City; New York Homeopathic Medical College and Flower Hospital, New York, 1926; affiliated with Beth David and St. Elizabeth's hospitals; died Nov. 25, aged 53, of coronary thrombosis.

Lesemann, Frederick Joseph ⊕ Los Angeles; Rush Medical College, Chicago, 1908; member of the Illinois State Medical Society; formerly practiced in Chicago, where he was for many years a member of the board of trustees and member of the senior surgical staff of the Englewood Hospital; died Nov. 25, aged 73, of coronary arteriosclerosis.

Loeb, Victor Alexander ⊕ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1899; for many years inspector for the city board of health; died in the Lankenau Hospital Nov. 12, aged 76.

Lowe, Orrin C. ⊕ Paola, Kan.; University Medical College of Kansas City, Mo., 1912; past president of the Miami County Medical Society; died Nov. 3, aged 70, of cirrhosis of the liver.

Lowthian, Elvin Lorne, Yorkville, Ohio; Western Reserve University Medical Department, Cleveland, 1908; died Nov. 1, aged 74, of cerebral hemorrhage.

Lundgren, Albert Conrad ⊕ Minneapolis; Marquette University School of Medicine, Milwaukee, 1913; member of the American Academy of General Practice; died in Las Vegas, Nev., Sept. 26, aged 62, of acute myocardial infarction.

MacAdam, Edward Wallace, New York City; New York Homeopathic Medical College and Hospital, New York, 1907; on the faculty of New York Medical College, Flower and Fifth Avenue Hospitals, where he was assistant attending physician; served as treasurer of the American Institute of Homeopathy; editor of the *Journal of the American Institute of Homeopathy,* from 1946 to 1948; died Nov. 16, aged 79, of pneumonia.

McClanahan, Benjamin Vaughn ⊕ Galesburg, Ill.; University of Illinois College of Medicine, Chicago, 1915; served during World War I; affiliated with Galesburg Cottage and St. Mary's hospitals; died in Beardstown Nov. 17, aged 61, of cerebral hemorrhage.

McClure, Gus Rock, Harrisburg, Ark.; American Medical University, Kansas City, Mo., 1928; died in the Baptist Hospital, Memphis, Tenn., Nov. 8, aged 49.

McKay, James George ⊕ Washington, D. C.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; served in the Spanish-American War, the Boxer Rebellion, the Philippine Insurrection, and World War I; affiliated with Doctors Hospital and Central Dispensary and Emergency Hospital; died in Mount Vernon Hospital Nov. 15, aged 81, of carcinoma of the larynx.

McKinney, Madison John, Sacramento, Calif.; University of Southern California School of Medicine, Los Angeles, 1950; interned at San Francisco Hospital, where he served a residency; served a residency at Stanford University Hospitals in San Francisco, Community Hospital of San Mateo County in San Mateo, and Santa Clara County Hospital in San Jose; died Nov. 20, aged 36, of poliomyelitis.

McLaughlin, Calvin Sturgis, Charlotte, N. C.; University of Maryland School of Medicine, Baltimore, 1896; past president of the Mecklenburg County Medical Society; formerly on the faculty of North Carolina Medical College; affiliated with Presbyterian Hospital and Mercy Hospital, where he died Nov. 15, aged 83, of acute myocardial failure.

Martinson, Stella Cleary, Graysville, Tenn.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1900; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; died Sept. 24, aged 84, of carcinoma of the bladder.

Maynard, Oswald S., ⊕ Nashua, N. H.; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, Canada, 1900; served as mayor and chairman of the board of health; affiliated with St. Joseph's Hospital and the Nashua Memorial Hospital; died Nov. 18, aged 79, of cerebral hemorrhage and hypertension.

Pitney, Orville, Redwood City, Calif.; Missouri Medical College, St. Louis, 1899; also a registered pharmacist; at one time practiced in Cheraw, Colo., where he was councilman, mayor, and

member of the board of education; served on the staff of the Mennonite Hospital in La Junta, Colo.; died in Sequoia Hospital Nov. 2, aged 78, as the result of injuries received when he missed the lower step of a commuter train coach and fell between the cars.

Preston, Robert Sheffey ⊕ Richmond, Va.; Johns Hopkins University School of Medicine, Baltimore, 1908; associate professor of clinical medicine at the Medical College of Virginia; died Oct. 28, aged 68, of a heart attack.

Pugmire, Charles Coulson Rich ⊕ Salt Lake City, Utah; Medico-Chirurgical College of Philadelphia, 1910; member of the Pacific Coast Oto-Ophthalmological Society; died Nov. 20, aged 73.

Reasonover, Farley Straughn, Dallas, Texas; Southwestern Medical School of the University of Texas, Dallas, 1952; interned at the Baylor University Hospital; died Oct. 25, aged 27.

Robertson, John Barks ⊕ Minneapolis, Minn.; Rush Medical College, Chicago, 1892; served during World War I; for many years practiced in Cottonwood, where he was county coroner, mayor, councilman, and member of the board of education; died Sept 19, aged 86, of carcinoma of the prostate with metastases.

Robison, Benjamin Franklin ⊕ Salt Lake City; University of Pennsylvania School of Medicine, Philadelphia, 1934; served during World War II; affiliated with St. Mark's Hospital, where he died Nov. 19, aged 44.

Roe, Cullen Bryant ⊕ Afton, Iowa; Drake University College of Medicine, Des Moines, 1912; past president of the Union County Medical Society; past president of the school board; died in the Greater Community Hospital in Creston, Oct. 30, aged 65, of acute myelogenous leukemia.

Rubin, Israel Bernard ⊕ Charlton, N. Y.; Tufts College Medical School, Boston, 1928; affiliated with Saratoga Hospital in Saratoga Springs, where he died Oct. 1, aged 47.

Russell, James Clinton ⊕ Chandlerville, Ill.; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1905; University of Nashville Medical Department, 1908; died in Schmitt Memorial Hospital, Beardstown, Nov. 7, aged 71, of injuries received in an automobile accident.

Rutter, Clinton E., Northumberland, Pa.; Medico-Chirurgical College of Philadelphia, 1903; president of the board of health; affiliated with Sunbury (Pa.) Community Hospital, where he died Sept. 8, aged 74, of coronary thrombosis.

Saunders, Jones Lindsey ⊕ Newport, Ind.; Rush Medical College, Chicago, 1904; served with the American Expeditionary Forces in France during World War I; on the staff of the Vermilion County Hospital in Clinton, where he died Nov. 12, aged 72, of coronary occlusion.

Scales, Willis West ⊕ Mobile, Ala.; Medical College of Alabama, Mobile, 1896; secretary of the Mobile County Medical Society; served as secretary of the Mobile County Board of Health and as administrative assistant to the county health officer; died Nov. 17, aged 77, of arteriosclerosis, hypertension, and coronary occlusion.

Scharnagel, Isabel Mona ⊕ New York City; Rush Medical College, Chicago, 1931; fellow of the American College of Surgeons; member of the American Radium Society; American Medical Women's Association, of which she was formerly secretary; affiliated with New York Infirmary and the Memorial Hospital, where she died Nov. 24, aged 47, of nephrosis.

Schoenholtz, George ⊕ New York City; Medical College of Virginia, Richmond, 1924; affiliated with Bronx, Lebanon, and Fordham hospitals; died Sept. 26, aged 55, of coronary thrombosis.

Schultz, Robert Richie ⊕ Scranton, Pa.; Jefferson Medical College of Philadelphia, 1925; served during World War I; formerly director of the department of public health; affiliated with Hahnemann, State, West Side, and Mercy hospitals; died Nov. 14, aged 54, of a heart attack.

Shannon, Joseph Barnet, Oklahoma City, Okla.; Physio-Medical College of Indiana, 1902; died Nov. 13, aged 74, of myocardial infarction and coronary arteriosclerosis.

Sievers, Claudius L., Denison, Iowa; Sioux City College of Medicine, Sioux City, 1904; died in Omaha, Nov. 3, aged 76.

Skinner, Henry Harlow ⊕ Yakima, Wash.; Western Reserve University Medical Department, Cleveland, 1908; fellow of the American College of Surgeons; served during World War I; served as president and secretary-treasurer of the Washington State Obstetrical Association; on the staff of St. Elizabeth's Hospital; died Nov. 17, aged 75.

Stampa, Samuel ⊕ Atlanta, Ga.; Emory University School of Medicine, 1916; affiliated with Georgia Baptist, St. Joseph, and Crawford W. Long Memorial hospitals; died Nov. 4, aged 67, following an operation on the prostate.

Stockard, Thomas James ⊕ Lawrenceburg, Tenn.; University of Nashville Medical Department, 1910; died in Decatur, Ala., Oct. 4, aged 72.

Stoner, David Clinton ⊕ Mount Joy, Pa.; Baltimore University School of Medicine, 1899; died Nov. 5, aged 76, of cerebral hemorrhage.

Taylor, Louise Hertig, Princeton, N. J.; Woman's Medical College of Pennsylvania, Philadelphia, 1890; died Oct. 22, aged 89.

Thames, Rufus ⊕ Milton, Fla.; Atlanta College of Physicians and Surgeons, 1906; died in Santa Rosa Hospital Oct. 26, aged 78, of cerebral thrombosis.

Tornabene, Vincent, Chicago; Chicago College of Medicine and Surgery, 1909; died Nov. 29, aged 78, of gastric hemorrhage and gastric ulcer.

Townsend, Eugene Herbert ⊕ La Crosse, Wis.; Rush Medical College, Chicago, 1917; died Oct. 23, aged 62, of Parkinson's disease.

Waiss, Alexander Sandor, Lagunitas, Calif.; Medical Department of Tulane University of Louisiana, New Orleans, 1892; died Nov. 8, aged 87.

Walton, George Britain ⊕ Chadbourn, N. C.; Tulane University of Louisiana School of Medicine, New Orleans, 1930; died in the James Walker Memorial Hospital, Wilmington, Nov. 14, aged 50.

Weaver, Don Dickinson ⊕ Oakland, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1911; fellow of the American College of Surgeons; on the staffs of the Providence, Peralta, and East Oakland hospitals; died Nov. 9, aged 63.

Wren, Alphonse A., New York City; University and Bellevue Hospital Medical College, New York, 1903; member of the American Urological Association; affiliated with Fordham Hospital; died in St. Elizabeth's Hospital Nov. 23, aged 76, of cerebral thrombosis.

GOVERNMENT SERVICES

AIR FORCE

Chilean Award to Surgeon General.—Ambassador Anibal Jara of Chile, as seen in the illustration, recently presented the Military Medal of Chile to Major Gen. Harry G. Armstrong, Surgeon General, U. S. A. F., at a ceremony at the Chilean embassy, Washington, D. C. The gold medal was awarded to General Armstrong for his "valuable services to the Chilean Air Force and to all humanity" as the author of "Principles

and Practice of Aviation Medicine" and for his assistance in providing training to Chilean students at the U. S. A. F. School of Aviation Medicine. Also attending the ceremony was Gen. Raul Yazigi, Surgeon General, Chilean Air Force, who is visiting Washington.

PUBLIC HEALTH SERVICE

Advanced Courses in Sanitation.—Ten advanced sanitation training courses have been scheduled for the period January to June, 1954, at the Environmental Health Center of the Public Health Service, in Cincinnati. The courses include bacteriological examination of water and dairy products, food sanitation, water pollution abatement, and the membrane filter in bacteriological analysis of water. They are designed for professional personnel from state and local health departments, water pollution control agencies, and governmental units. Letters of application for training should be sent to Officer in Charge, Environmental Health Center, Cincinnati.

The courses are scheduled as follows:

Jan. 11-15, Advanced training in bacteriological examination of water
Jan. 18-22, Advanced training in bacteriological examination of milk and dairy products
Jan. 25-29, Food sanitation training
Feb. 16-19, Short course in phenol determination (intensive laboratory practice in determination of phenols in industrial wastes and polluted waters)
March 8-19, Advanced training for sanitary engineers in water pollution abatement programs
April 7-9, Bioassay of industrial wastes
May 3-7, Membrane filter in bacteriological analysis of water
May 19-21, Short course in the analysis of metals in industrial wastes
June 8-11, Advanced training for aquatic biologists in water pollution control
To be announced, Emergency sanitation training

Appointments to National Councils.—The Surgeon General has announced the appointment of Dr. Gail M. Dack, director of the food research institute, University of Chicago, as a member of the National Advisory Health Council, and of Mr. Elmer H. Bobst, New York, president of William R. Warner and Company, Inc., and of Richard Hudnut, Inc., as a member of the National Advisory Cancer Council. Dr. Dack served with the office of scientific research and development and as medical consultant to the Army during World War II, and since 1951 he has been vice-chairman of the National Research Council's commission on foods. Mr. Bobst, who became a registered pharmacist in 1905, has been associated with several prominent drug firms, and in 1945 he was made president of Hudnut-Warner and all their subsidiaries. He is a trustee of Rutgers University and has served as vice-chairman of the board of the American Cancer Society and since 1947 as chairman of the national campaign committee.

The appointment of John Hay Whitney, New York financier, to the National Advisory Health Council, has been announced by Surgeon General Scheele. A colonel in the Air Force during World War II, Mr. Whitney has since served as special adviser and consultant on public affairs for the Department of State and as a member-at-large of the U. S. National Commission of the United Nations Educational, Scientific, and Cultural Organization. He is president of New York Hospital, chairman of the board of the Museum of Modern Art, and member of the board of trustees of the National Planning Association. Mr. Whitney obtained his bachelor's degree from Yale University in 1926, then studied at Oxford University in England for a year.

Personal.—The Surgeon General, on Nov. 25, announced the appointment of Frank A. Robbins Jr., of Harrisburg, Pa., to the National Advisory Arthritis and Metabolic Diseases Council. Mr. Robbins retired in 1946 as general manager of the Steelton Plant of the Bethlehem Steel Corporation. He is a graduate of the Massachusetts Institute of Technology, and for several years he was secretary of the department of public assistance of the state of Pennsylvania.—Among five new members of the National Advisory Heart Council of the Public Health Service appointed by the Surgeon General are E. Cowles Andrus, M.D., Baltimore, and Owen H. Wangensteen, M.D., Minneapolis. Dr. Andrus is president-elect of the American Heart Association. Dr. Wangensteen is chief of the department of surgery at the University Hospital, Minneapolis.

VETERANS ADMINISTRATION

Hospital News.—Dr. Richard L. Frank, professor of clinical psychiatry, State University of New York Medical College at New York, addressed the hospital staff of the VA Hospital, Northport, L. I., N. Y., Nov. 12, on "An Approach to the Problems of Diagnosis."——William A. Hunt, Ph.D., Chairman of the Department of Psychology at Northwestern University, Chicago, lectured at the VA Hospital at Downey, Ill., Dec. 2, on "The Nature and Function of Diagnosis," and "An Experimental Approach to the Diagnostic Process."——Dr. Lothar B. Kalinowsky, New York, addressed the staff of the Veterans Administration Hospital, Northport, N. Y., Oct. 27 on indications for shock treatments and psychosurgery. Dr. Albert F. R. Andresen, New York, Oct. 29, addressed the staff on current physiological aspects of gallbladder disease. On Oct. 20, Dr. Emil A. Gutheil, president, Association for the Advancement of Psychotherapy, gave the address, "Psychotherapy in Latent Schizophrenia," before the Long Island Psychiatric Society, also at the Northport VA Hospital.——Dr. J. L. Moreno, physician-in-charge, Moreno Sanitarium, Beacon, N. Y., discussed group psychotherapy at a seminar held at the VA Hospital, Downey, Ill., Dec. 14, 1953.

Appoint Chief of Rehabilitation Service.—Dr. Louis B. Newman has been appointed chief of the physical medicine and rehabilitation service at the new 520-bed Veterans Administration Research Hospital, 333 E. Huron St., Chicago. Prior to this appointment Dr. Newman had been chief of physical medicine and rehabilitation at the Veterans Administration Hospital, Hines, Ill., since March, 1946.

FOREIGN LETTERS

COLOMBIA

Radical Surgery of Neck.—The Second National Meeting of Surgeons was held in Medellin in April. Drs. J. A. Jácome Valderrama, B. Moreno Mejía, and J. M. Huertas de Francisco read a statistical study on indications and results of radical surgery of the neck as they have been observed during the last 10 years at the National Institute of Cancerology (the old National Institute of Radium). It is difficult to evaluate the results obtained from the operation because many of the patients fail to report for follow-up observation. Radical operations have been performed on the neck in the institute since shortly after it opened Aug. 20, 1935. From 1935 to 1940, there were 25 such patients; from 1943 to 1950, 52 patients; and in 1951 and 1952, 26 patients. Thus there was an increase of from 5 to 13 patients per year. The tumors for which such operations are considered indicated were located as follows: tongue (28.2%), the skin of the face and of the neck (14.1%), lips (12.8%), tonsils (9%), thyroid (6.41%), and others 29.5%. The incidence of cancer of the thyroid is greater than these figures show, because many of the patients who have cancer of the thyroid are operated on by a general surgeon and do not come to the institute. Cancer of the tongue, skin, and lips is also more frequent than the statistics show, because a large number of patients with cancer of these structures have only roentgen therapy with a large percentage of cures. Radical operation is not necessary for these patients if roentgen therapy is given before the occurrence of metastases. Malignant melanoma constitutes the exception to this rule, as it always calls for radical operation as early as possible. The frequency of malignant melanoma is shown by the fact that 10 of the patients operated on in the last 10 years had this type of lesion. The authors obtained good results in 62.8% of the cases, with control for one to five years, recurrences in 25.7%, late metastases in 3.8%, immediate or operative death in 5.1%, and good results in benign tumors in 2.57%.

Postgraduate Course.—The Unidia Medical Association with headquarters in Bogotá conducted a postgraduate course from Oct. 19 to 24, 1953. Sixty physicians attended the course, which consisted of lectures and practical demonstrations by Dr. H. H. Turner, professor of medicine of the University of Oklahoma and secretary of the Endocrine Society, Dr. Lawson Wilkins, pediatrist of the Johns Hopkins Hospital, Baltimore, and vice-president of the Endocrine Society, and Dr. Ernest Salgado, supervisor of work on the concepts of Prof. Hans Selye of Montreal University. Professor Turner dealt with hypogonadism in men and women, the diagnosis and treatment of hyperthyroidism (three years of experience with radioactive iodide), endocrine disorders in children and psychosomatic aspects of pseudoendocrinopathies. Professor Wilkins discussed constitutional variations in development, hypothyroidism in children, endocrine and extraendocrine factors retarding growth, sexual precocity, infantilism, and the diagnosis and treatment of the adrenogenital syndrome. Dr. Salgado spoke on the general adaptation syndrome, suprarenal insufficiency, the clinical use of cortisone and corticotropin, and arterial hypertension. Equipment for simultaneous translation of the lectures from English into Spanish was used.

Personal.—Dr. Orlando Cañizares, dermatologist of the Bellevue Hospital of New York and associate professor of dermatology of the school of medicine of the New York University, came to Colombia on invitation from the Colombian medical profession. He visited the hospitals of Bogotá and gave some lectures on his specialty.

The items in these letters are contributed by regular correspondents in the various foreign countries.

FRANCE

New Method of Triboelectricity.—Triboelectricity (frictional electricity), the first form of electricity used in electrotherapy, has been produced by static machines. Professor Darmois reported on April 8 to the Academy of Sciences that this same triboelectricity may be obtained from polyvinyl chloride fibers submitted to a slight friction. This negatively charged static electricity produces an electric field of a size only limited by the formation of the spark; in the air it corresponds to a value of nearly 30,000 volts per centimeter of height.

Dr. Marc Iselin, chief surgeon of the Nanterre Hospital and a member of the National Academy of Surgery, thought that triboelectricity could be used in therapeutics by the simple application of bandages or underclothes made of polyvinyl chloride fibers without the use of any generator. For a year and a half F. Deniker has been using this method at the Nanterre Hospital on 75 patients by general or local applications. Seven of 10 patients with cervicobrachial neuralgia obtained complete relief after treatments of various duration. Eight of 18 patients with luxations, fractures, sprains, and trophic disorders were rapidly cured and 8 others much improved. It is in these patients that the analgesic effect of such bandages is of great value. In five of seven patients with lumbar neuralgia, rapid relief of pain was noted; another was improved; and the treatment failed in the remaining one. Five patients with intercostal neuralgia were definitely cured after a brief treatment. Four patients with sciatic neuralgia were much improved. Five of 10 patients with degenerative articular rheumatism and 2 of 4 patients with coxitis were improved. Their pain subsided progressively, and the abduction angle of the lower limbs was improved by 20 degrees. Patients with herpes zoster, gonalgia, torticollis, and pulmonary tuberculosis also obtained relief from pain. All but four of these patients were treated with triboelectricity alone. Follow-up studies included functional signs, radiological and biological examinations, examination of the limitation of movements, and dynamometry. There is apparently no contraindication to the use of this treatment, and all patients agree to a general feeling of well-being and to a diminution of asthenia. In his report of July 3 to the Medical Society of the Paris Hospitals, Deniker stressed, among other things, that the therapeutic efficacy of polyvinyl chloride was checked in 10 patients, during the course of the treatment, by substituting underclothing of regenerated cellulose. This was followed by a reappearance of pain and functional impairment in eight patients, and the other two reported continued alleviation of pain. The mode of action is not understood.

New Sulfone in Leprosy and Tuberculosis.—Tzanck, Basset, and Salomon, having used a new sulfone (Di-atox argentique) in the treatment of leprosy for about 43 months, presented the first three patients treated without interruption by this drug at the meeting of the Medical Society of the Paris Hospitals on June 26. The daily dose was three tablets of 50 mg. each for a 13-year-old child at the beginning of the treatment and four such tablets for adults with lepromatous forms, which was associated in one case with severe nervous impairment. All of the patients had leonine facies. After a clinical recovery, in two patients after 19 months of treatment and in the third after 24 months, the dose was decreased to 100 mg. and later to 50 mg. The three patients have returned to a normal life in the community. During the course of treatment no relapse occurred. Repeated hematological examinations revealed no alteration of the hematological constants. The authors stressed the perfect toleration of the sulfone by the organism, the preservation of the high degree of efficacy, and the absence of acquired tolerance by the bacteria.

Tzanck and his associates have also used this sulfone in treating the various forms of cutaneous tuberculosis with promising results. The investigations of Gernez-Rieux and his associates with tuberculostatic drugs have already shown that

the most rapid and definite action is obtained with a combination of isoniazid and sulfone. For some time, Benda has been treating his patients, first by an initial treatment with streptomycin, isoniazid, *p*-aminosalicylic acid, and the sulfone, followed by a maintenance treatment with isoniazid and sulfone. He confirmed the remarkable tolerance for this sulfone, as well as its absolute innocuousness, in contrast with the earlier sulfones, which were detrimental to the blood. He thinks that it is too early to estimate the absolute therapeutic value of this sulfone in tuberculosis, as he always uses it in association with other antibiotics.

ISRAEL

Prof. E. Wertheimer Elected Dean.—Dr. E. Wertheimer, professor of biochemistry in the faculty of medicine of the Hebrew University, has been elected dean of the faculty for the two year term 1953-1955, succeeding Prof. A. Dostrovsky. Professor Wertheimer was born in Germany and held a professorship of physiology at the University of Halle from 1927 to 1933, when he settled in Israel. Since then he has served in his present post of professor at the university and as head of Hadassah's department of clinical chemistry.

The problem of permeability of the living cells and membranes attracted Wertheimer's interest during the first years of his scientific activity in Halle. His work on the frog skin and yeast cells contributed to the definition of the peculiarities of biological membranes and stressed the importance of metabolic activities occurring in the cell membrane. This work was continued after his arrival in Israel and led to the additional finding that the sugar assimilated by yeast cells is transformed into a stable alkaline derivative. In his work on the absorption of sugars by the intestine, he succeeded in differentiating the active and the passive processes by means of phlorhizin poisoning. He demonstrated for the first time the phosphorylation of sugars by living yeast.

In another series of papers he established the concept that adipose tissue is an active tissue with special metabolic functions and not an inert site of fat storage, as was generally assumed. He was the first to present experimental evidence for the dependence of fat mobilization and deposition on the innervation of the tissue. His work on the deposition of glycogen in adipose tissue was started in Halle and continued in Jerusalem, and he established the conditions for its deposition and dependence on endocrine and nutritional factors. The fact that glycogen deposition always preceded fat deposition led him to the hypothesis that adipose tissue is capable of synthesizing part of its fat and that this synthesis is connected with glycogen deposition. With his pupils he was later able to prove this point by measuring the respiratory quotient of glycogen-containing tissue and by experiments with deuterium and with radio active acetate. Special issues of *Acta Medica Orientalia* and *Harefua* commemorated Professor Wertheimer's 60th birthday. They contain medical scientific contributions of his pupils and friends.

Synthetic Activity of Adipose Tissue.—In *Acta Medica Orientalia* (12:187, 1953), G. Rose, I. Stern, and B. Shapiro report on the synthetic activity of adipose tissue. As far back as 1926 Wertheimer provided experimental proof that fat mobolization from adipose tissue depended on innervation and that the increased mobilization of fat to the liver, occurring in the pancreatic and phlorhizin diabetes, could be prevented by insulin (humoral factors on the activity of adipose tissue). Recently it was shown that an active metabolic process is involved in the uptake of fatty acids by adipose tissue from the medium in vitro.

The presence of glycogen could not be demonstrated in the adipose tissue of normally fed animals. If, however, a period of fasting or undernutrition was followed by a diet rich in carbohydrate, glycogen could be found regularly. On continuation of the carbohydrate feeding, the glycogen disappeared. Glycogen was also found inside the cells, but not in the intercellular spaces, showing that, most likely, glycogen was synthesized within the cells and not deposited after reaching the tissue in the blood stream. Glycogen deposition precedes deposition of fat and terminates when the latter is completed. It was therefore suggested by Wertheimer that glycogen deposition in adipose tissue precedes fat deposition. Direct evidence for the assumption that adipose tissue is capable of fat synthesis was furnished by in vitro experiments involving the incubation of adipose tissue in a medium enriched with heavy water. Deuterium was found to be incorporated into the fatty acids and the incorporation was increased in tissues from rats kept on a diet accelerating glycogen deposition and fat synthesis. In order to obtain final proof and to get some information on the precursors of fat synthesis in adipose tissue, C^{14}-labeled glucose and $C^{14}OOH$-acetate were incubated in vitro with adipose tissue. The authors found that uniformly labeled C^{14}-glucose as well as C^{14}-OOH-labeled acetate were converted into long chain fatty acids on incubation with adipose tissue in vitro. No significant C^{14}-carbon was found in the cholesterol fraction of adipose tissue, and the C^{14} in the synthesized fatty acids was not confined to the terminal carbons, suggesting a complete new synthesis of fatty acid molecules rather than the addition of a two-carbon fragment to an existing fatty acid chain.

Fluorogenic Substances in Urine and Adrenal Cortex.—Bernhard Zondek and Michael Finkelstein have summarized their investigation on fluorogenic substances in the phenolic (estrone) fraction of urine and its relation to the adrenal cortex. The introduction of fluorometry as an analytical method for the determination of natural estrogens and of certain steroids related to the adrenal cortex added a new tool for the investigation of the steroid hormones and of their metabolites. The authors investigated the fluorogenic substances occurring in the phenolic and neutral fractions of urinary extracts.

As a result of these studies, the isolation of a new steroid compound from the neutral fraction of the pooled urine of two female pseudohermaphrodites could be accomplished. It was shown that the neutral fraction of normal male and female urine contains a fluorogenic substance. Whereas the excretion in male urine was of a uniform level, the excretion in female subjects was correlated to the excretion of estrogens during the menstrual cycle. The peaks of the excretion of the neutral substance usually preceded the estrogen excretion peaks by one or two days. In the last weeks of pregnancy the urinary excretion of the neutral fluorogenic substance was strongly augmented. Although the structure of the fluorogenic compound has been established only in case of the two pseudohermaphrodites, there is some evidence that the fluorogenic material present in the male and in the urine during pregnancy may have a similar constitution. A detailed study of the phenolic fraction was also undertaken. This fraction was partitioned into two subfractions: one water-soluble fraction that was tentatively called the "estriol fraction," and the second—insoluble in water but soluble in benzene and petroleum ether—called the "estrone-estradiol fraction." It is assumed that the estrone fraction contains a phenolic compound similar in structure to estrone or estradiol, but with a low or even failing estrogenic potency.

One of the pseudohermaphrodites was given 50 mg. of cortisone daily intramuscularly for five and one-half weeks. After this period the quantity of the injected cortisone was reduced to 25 mg. per day, and cortisone administration was continued for 13 weeks. The treatment caused a substantial decrease in the excretion of the fluorogenic compound of the estrone fraction in the first week (25 mcg.) per hour. At the same time the excretion of biologically active estrogens remained unchanged, and there was even a slight increase (60 mcg. per 24 hours). Two weeks after the treatment was started, an additional decrease of the fluorogenic material was observed (16 mcg. per 24 hours), with no change in the estrogen excretion. Continuation of cortisone injections for one month caused a rise in biologically active estrogens (100 mcg. per 24 hours). No recording of fluorogenic material was made at that time. Prolonged treatment with cortisone (69 days) brought the estrogens to a normal level, and later (113 days) a large drop was observed (3 to 5 mcg. per 24 hours). At the same time the fluorogenic substance remains on the low level (25 mcg. per hour). Under the influence of cortisone

the excretion of the fluorogenic material of the estrone fraction rapidly decreases, whereas the biologically active estrogens do not seem to be affected for a long time.

Determination of Urinary Estriol for Diagnosis of Fetal Death.—The department of Prof. Bernhard Zondek has published a paper in *Harefuah* (**45**:142, 1953) on the determination of urinary estriol for the diagnosis of fetal death. The excretion of chorionic gonadotropin decreases in the second half of pregnancy and becomes less regular, so that the Aschheim-Zondek test based on the determination of chorionic gonadotropin is sometimes unreliable. In addition to chorionic gonadotropin the placenta produces estrogenic hormones, and it has been shown that large amounts of estriol can be extracted from the placenta. During pregnancy 90% of the urinary estrogens are in the form of estriol. This evidence suggested that the determination of estriol in the urine can be used as a test for placental function. A special method of separating estriol from the other estrogens was used, and the estriol was determined fluorometrically. Samples of urine from normal pregnant women were tested for estriol, and it was found that, while in nonpregnant women the estriol content does not pass 100 mcg. per liter, in the first three months of pregnancy the value of estriol reaches 400 mcg. per liter and after the fourth to fifth month, the rise is up to 4,000-5,000 mcg. per liter. During the last trimester the estriol values vary between 5,000 and 20,000 mcg. per liter. Further examination revealed that shortly after the death of the fetus in late pregnancy, the estriol excretion falls rapidly. The steep decrease of estriol in urine (less than 1,000 mcg. per liter) was therefore used as a method for determining fetal death in 28 cases.

In addition to the estriol determination, a quantitative Aschheim-Zondek test was made, using hyperemia in the ovary of infantile rats. The result can be summarized as follows: In nine patients the Aschheim-Zondek test was positive and the estriol determination gave normal values. In all these cases the fetus was living. In two patients the Aschheim-Zondek test and the estriol determination gave normal results; two days later there was an abortion. In both cases the fetus showed signs of life. In seven patients the low estriol content of the urine and the low values of the chorionic gonadotropin proved the death of the fetus, which was confirmed clinically. In 10 patients the estriol method proved to be superior to the determination of the chorionic gonadotropin for diagnosing fetal death. In seven of these patients the Aschheim-Zondek test indicated the placenta was still functioning (5,000 hyperemia units positive), whereas the low content of estriol in urine (less than 1,000 mcg. per liter) indicated that production of estrogen had already decreased markedly. The diagnosis of fetal death based on estriol content in these seven patients proved to be correct. In one patient with toxemia of pregnancy in the sixth month the urine was examined daily. The sudden decrease of estriol excretion indicated cessation of placental function and therefore death of the fetus. A few days later, a macerated fetus was expelled. If the Aschheim-Zondek test is positive and there is decrease of estriol (less than 1,000 mcg. per liter), the estriol test is considered the more reliable one.

The fetus can be dead in spite of the fact that both tests are positive, as happens in cases of primary, endogenous death of the fetus. In such rare cases the placenta can continue to function for several weeks. A diagnosis should never be made on the basis of a single urine examination, but should be repeated on the next day or for several days to reveal whether the hormone content is really decreasing.

Corticotropin in Blood in Pregnancy.—Bromberg, Sadowsky, and Sulman report the presence of corticotropin (ACTH) in the blood of pregnant women. It is known that corticotropin is responsible for increased pigmentation if it is given in high doses for a long time, if there is over-production by the pituitary of corticotropin (in Cushing's disease), if in Addison's disease an increased corticotropin output acts as a compensatory mechanism, or in pregnancy, which is characterized by an increased production of hypophyseal hormones in the placenta, including corticotropin. The determination of the chromatophorotropic factor in the blood was used as an assay of corticotropin levels. The validity of this assay was based on the following observations: corticotropin causes green-adapted amphibians to turn dark brown. The tree frog, Hyla arborea, reacts to doses of corticotropin as small as 0.01 to 0.001 mcg. It seems, therefore, that the chromatophototropic hormone is a fraction of corticotropin. Furthermore intermedin-treated guinea pigs excrete increased quantities of 17-ketosteroids.

Human beings have a poorly developed intermediate hypophyseal lobe. Intermedin is produced in man by the basophilic cells of the anterior pituitary together with corticotropin. Thus in nature corticotropin and intermedin together constitute corticotropin, although they are separable factors. This has been demonstrated in both animal and human corticotropin. By the chromatophorotropic reaction in the tree frog, the corticotropin blood levels of 150 women in different stages of pregnancy were examined. Blood corticotropin was found to be increased in 10 to 20% of the pregnant women.

This conforms with observations that often, but not always, rheumatoid arthritis is alleviated and 17-ketosteroid excretion is increased in pregnancy. In a certain percentage of pregnant women a brown pigmentation appears at sites that are not target areas of estrogenic hormones, e. g., the abdomen (pigmentation of the nipples and vulva is probably an estrogenic effect). Hence it seems that increased corticotropin production is a typical feature of pregnancy, but the pattern of effects manifested by the target tissues varies from patient to patient in accordance with the individual hormonal fluctuations in the blood. In all nonpregnant and normal patients so far examined, the corticotropin levels have been less than 1 frog unit per 20 cc. of blood or less than 50 units per liter. Immediately after labor, higher corticotropin levels (100 to 166 units per liter) were found in a large number of postpartum patients, apparently owing to operational stress.

LONDON

Royal Chest Hospital Closed.—Many will regret the closing of the Royal Chest Hospital, usually regarded as the first chest hospital in the world. It owes its origin to Dr. Isaac Buxton (1775-1825), a nonconformist minister who gravitated to medicine and graduated at Göttingen. He subsequently became physician to the London Hospital. Sir Astley Cooper was one of many interested in Buxton's thesis that there should be a special hospital for diseases of the chest, and he was largely instrumental in securing the Duke of Kent as the first president. It was the Duke who opened the Infirmary for Asthma, Consumption, and other Pulmonary Diseases, as it was originally named in 1814. It has never had more than 80 beds, and there have been times when it had no inpatients at all; it merely dealt with outpatients. It received commendation from Osler when, in 1912, arrangements were made for it to house the tuberculosis dispensary of the local borough. It was badly damaged during an air raid in 1941, and since then it has only been able to care for outpatients. It may never have attained the international fame of some of the other special disease hospitals of London, but Londoners have always regarded it with particular affection.

Disseminated Histoplasmosis.—The second case of disseminated histoplasmosis reported in this country is described by S. Locket and others (*Brit. Med. J.* **2**:857, 1953). The patient was a man, aged 32, who had been in military service in Alexandria and Port Said and who had visited Durban and Bombay. He had not, however, been abroad since 1945. His symptoms dated from the end of 1951 when he complained of abdominal pain similar to that of peptic ulcer. When first seen in December, 1952, he had fever and had lost weight. His spleen, liver, and axillary glands were enlarged, and there were two ulcers in his mouth. These were 2 cm. in diameter, were granulomatous in appearance, and had a raised rolled edge. Marrow puncture was normal, and a histoplasmin intradermal test was negative. A roentgenogram revealed a spreading pulmonary lesion. Histoplasma capsulatum was grown from a biopsy specimen of one of the ulcers. There was no response to ethyl vanillate in doses of about 50 gm. daily,

and the patient died suddenly in February, 1953. At necropsy, histological evidence of histoplasmosis was found in sections from the liver, spleen, lymph nodes, bone marrow, thyroid, and suprarenals. H. capsulatum was cultivated from the spleen, suprarenals, liver, lung, and bone marrow. The three patients with localized histoplasmosis who have been reported in this country had all been in India. In view of the prolonged incubation period, it is considered likely that other cases may now be expected to occur in this country in soldiers who lived in endemic areas during the war.

The Nuffield Foundation.—For the year ended March 31, 1953, the Nuffield Foundation has allocated grants totaling £713,696. In the field of rheumatism, grants have been made to Prof. F. G. Young for work on the isolation and purification of corticotropin (ACTH); to Prof. A. R. Todd for work on methods for the systematic structural analysis of oligopeptides and the synthesis of peptides; to Prof. W. T. Astbury for biophysical analysis of connective tissue and for studies on the controlled synthesis of collagen fibrils in tissue culture; and to Sir Robert Robinson for work on the synthesis of cortisone. The foundation has also set aside £25,000 to finance a five year research fellowship on the scientific aspects of aging.

The Drug Bill and Proprietaries.—The drug bill continues to be the item in the National Health Service budget selected for attack as the easiest way of saving money. The Minister of Health stated in public that he was worried about the cost of prescribing that, at the estimated sum of 46.3 million pounds for this year, is prejudicing many other urgent developments in the service. The suggestion that is always being advanced is that, if only practitioners would prescribe fewer proprietary and more official preparations, then the nation's drug bill would fall substantially over night. In 1948, proprietary preparations accounted for 24% of the total cost, and in 1952 they accounted for 56%. The Minister's latest move, therefore, has been to issue to every general practitioner a list showing the cost of some commonly used proprietary preparations and of some National Formulary preparations and comparing the cost of the proprietary preparation and that of the official equivalent. Of the 243 proprietary preparations listed, the cost, compared with the equivalent official preparation, is higher in 67, lower in 47, and the same in 10; no official equivalent is given for the remainder. The proprietary preparations that are cheaper than the official equivalent preparation are certain sulfonamides, barbiturates, vitamins, estrogens, and androgens. The Association of British Pharmaceutical Industry made the following comments: "The issue by the Ministry of Health of comparative costs for widely-prescribed proprietary drugs and their non-proprietary equivalents should effectively dispel the false impression that, in general, proprietaries are unnecessarily expensive." The *Pharmaceutical Journal,* the official organ of the Pharmaceutical Society of Great Britain, concludes an editorial on the subject by laconically remarking that "the most likely effect of the publication of the list is a general decline in prices due to competition between the two sides of the industry, indeed it has already begun." The *Lancet* comments: "These figures should dispel the impression that nearly all proprietary preparations are needlessly expensive; and clearly the practitioner can continue to prescribe some well-tried proprietary preparations without misgiving . . . the main saving is likely to come from a general lowering of costs through healthy competition between proprietary and official drugs."

The Minister and Regulations.—Reference has previously been made to the refreshingly practical, nondoctrinaire manner in which the present Minister of Health has tackled the difficult job of trying to make a success of the National Health Service. He recently expressed views that struck a responsive chord in the hearts of many practitioners when he said that there are far too many regulations about the work of executive councils. "Regulations fall from the Department like the leaves of autumn, to the dismay of any Minister asked to sign them. This is all wrong. Government by regulation has increased, is increasing and ought to be diminished." One reason given for this increase is that "the very professions who stand most strongly for professional liberty are most urgent in multiplying regulations. In consequence, executive councils are swaddled in red tape." The Minister expressed the hope that one day the stage may be reached when his department issues general guidance to be interpreted and adapted by executive councils to local conditions in light of common sense. "But," he added, "this presupposes that council members are of sufficient caliber and experience in the conduct of public business to be able to run local affairs in this way." This is a challenge that must be taken up by the medical profession and by those laymen who wish to free the service as much as possible from the red tape that has done so much to stultify the development of the service along reasonable lines.

NORWAY

A Controlled Study of Isoniazid.—In March, 1952, the manufacturing chemists, Nyegaard & Co., provided the medical department of Ullevaal Hospital with a supply of isoniazid that was distributed between this department and certain sanatoriums with a view to a comprehensive and controlled study of its effects on chronic pulmonary tuberculosis. Patients with far-advanced cavernous lesions and positive sputum, i. e., cases not suited for active treatment of any kind, were selected for this study. Twenty-eight patients were treated with 200 mg. of isoniazid daily for 12 weeks, while 19 patients suffering from the same type of lesion received inert tablets only. Neither the doctors nor the nurses knew which of the patients received isoniazid tablets. Careful records were kept of both groups with regard to temperature, weight, amount of sputum and tubercle bacilli, sedimentation rate, hemoglobin, urine, cough, and general status. The lungs were examined radiologically before and after treatment, and the final evaluation of the radiograms were undertaken collectively at a joint sitting before the examiners knew which of the patients had actually been given isoniazid.

With regard to the radiological findings definite regression was diagnosed only in 6 cases, and all of them belonged to the isoniazid-treated group. Thirteen of the 28 isoniazid-treated patients and 5 of the 19 controls showed possible regression. Statistical analysis showed that the chest roentgen findings indicated a definite difference with regard to improvement, with a 99% probability that this difference was not coincidental. A gain in weight occurred in 19 of the 28 isoniazid-treated patients and in 4 of the 19 controls. In other respects the difference between the treated and nontreated patients was slight. It would seem from this study, which is reported in the May, 1953, issue of the *Journal of the Oslo City Hospitals,* that the chemotherapeutic benefits from isoniazid are limited in patients with chronic, productive-fibrotic pulmonary tuberculosis with slight toxic manifestations. Since drug-resistant strains of tubercle bacilli emerged quite early in this study, the authors concluded that it is not justifiable in patients of this type to give isoniazid alone. The development of resistant strains may possibly be prevented by combining this drug with other chemotherapeutic measures or antibiotics.

A Norwegian Institute for Medical Statistics.—On the initiative of Prof. H. J. Ustvedt, who heads the Medical Department of Ullevaal Hospital which serves the city of Oslo, the Norwegian life insurance companies have granted 50,000 Norwegian kroner annually, for a period of five years, toward the establishment of an Institute for Medical Statistics at this hospital. In the past each of its various departments has worked independently in collecting and analyzing data that concern the long-term prognosis in different types of disease, and the assessment of the therapeutic effects of new drugs. These problems, in the future, will be dealt with at the new institute. Dr. Knut Westlund has been appointed chief of this institute. He was educated at the Johns Hopkins University School of Hygiene and Public Health. It is hoped that the pooling of the material of the various hospital departments in this way will ultimately mean a great economy of labor and yield easily available information of interest not only to life insurance companies, but also to the medical profession and the general public.

CORRESPONDENCE

CRITICISM OF PHYSICIANS

To the Editor:—Oftener and oftener we read in nationally circulated magazines and journals stories of rascality in the medical profession. These articles usually follow the same pattern—sensational exposé of "unnecessary" surgery, "ghost" surgery and fee-splitting, poor surgery, poor medicine, fee gouging, or some variation of these. Some of these stories have been almost venomously critical of unidentified physicians practicing in unidentified hospitals; some have given the identity of physicians and hospitals in the few isolated instances in which unethical practices were partially supported, at least, by expert medical investigators. All of the articles I have read, however well founded the criticisms may have been in the few such cases publicized, have had the effect of being adversely critical of the medical profession and of hospitals generally. For reputable magazines to lend their pages to what amounts to calumny against 99% of the members of a high profession hardly seems in keeping with our American tradition of fair play. To publicize nationally the unethical practices of a handful of physicians in a few scattered hospitals does many times more damage to the public and to physicians and hospitals undeserving of criticism than would be done by the handful of rascals, even if they were permitted to go on their way unchecked. Nothing grows like the seeds of suspicion, and these articles have undoubtedly and to a serious extent sown the seeds of suspicion in the public mind. If such writings continue to be published in a manner influencing public thinking against the medical profession, it won't be long until practically every physician with a hospital practice will be a suspect. And, if this should happen, the high standard of health that exists in this country by virtue of its efficient hospitals and competent physicians will decline, and the big loser again will be John Q. Public.

It seems reasonable to suggest that the national medical and hospital societies would do well to ask every publisher of note in this country to refuse to accept for publication any paper adversely critical of the medical care and treatment of patients in our hospitals without first thoroughly investigating the author's integrity and competence and obtaining from competent medical men in active practice absolute proof of the validity of the material that the author submits for publication. Such articles, if they must be circulated nationally, should not generalize as most of them do. They should be specific and should deal with the local situation giving rise to them. Above all they should make clear that the person or institution written about is a specific one and that the criticism does not necessarily apply to other physicians and hospitals.

I have been engaged in hospital organization and management for 10 years during the course of which I have been closely associated professionally with about 300 physicians in several public, quasipublic, and private hospitals. Each of these hospitals, particularly the public and quasipublic type, represents good average hospital staff organization. They are dependable and proud of the work they are doing in and for their communities. Not one of the 300 physicians has to my knowledge been a renegade from his profession, unusual as this may seem to the chronic critic of the hospital medical practitioner. Certainly the same can reasonably be regarded as generally true of practically all hospital staff organizations.

I hope that this letter will not create the impression that, in my capacity as a hospital administrator, I have the slightest sympathy for the unethical and callous physician. If he is incorrigible, he is a despicable person unworthy of membership in the medical profession. But those qualified to discipline him should be given an opportunity to do so before smearing the individual case over the land in magazines and inviting destruction of the confidence of the American people in the most indispensable services there are. The organized hospital medical staff, with the backing of an honest board of trustees and administration, can and will in the normal course of events eliminate the unethical practitioner of medicine in whatever community he may be found. Publicity, universally unfavorable to physicians and hospitals, born of the thinking and opinions (and, sometimes, prejudices) of a few hospital administrators both lay and professional, newspaper reporters, university professors, and others with a flair for writing but without qualification as medical clinicians, cannot possibly contribute to the advancement of medical and hospital care of the patient.

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SEXUAL BEHAVIOR

To the Editor:—Kinsey and associates' "Sexual Behavior of the Human Female" merely "dusts off" many abandoned theories and adds few useful facts to the study of female sexual behavior. Through the widespread interest in the volume, however, sexual behavior now is discussed more openly, and it is evident that there is a vast difference between what one practices and what one preaches. Also, Kinsey's views may help change our too punitive laws dealing with sexual deviations, particularly those advocating castration as a means of curbing perverse tendencies. These laws are little or no help to offenders. Despite these good points, millions of persons are uncritically accepting the controversial inferences of the Kinsey report. Physicians are being bombarded with questions concerning the Kinsey report; therefore, prompt correction of Kinsey's faulty inferences is mandatory to prevent their perpetuation as dogma.

First, the 5,940 women interviewed are only 1/14,000 of the adult female population—a tiny and completely unrepresentative segment of the typical American woman. Of the volunteers 75% went to college, while only 7.5% of the women in the country have done so. Single women were three times greater than the total number at large. Devoutly religious women, who are more faithful, were not adequately represented. In view of these facts, an atypical sample was used as a distorted yardstick. Dollard noted that the choice of the volunteers is decisive since "each unit in the Kinsey sample stands for approximately 10,000 people; if a hundred are mischosen, one million people are misrepresented." Also, normal women will seldom reveal intimate sexual matters to a stranger who rapidly asks 300 to 500 questions in a one or two hour interview. Most persons are inconsistent even when paying for help over sexual problems. Hence, one of Kinsey's basic methodological errors is that many women, in a nonmedical situation, are apt to be evasive about their sex life, particularly, when poor motivations for telling the truth are present.

Many volunteers had neurotic reasons for their "revelations." Those who felt guilty over abnormal sex patterns "confessed," thus easing their consciences of real or imagined guilt. Those who either lacked sex experience or who had been sexually rejected used the interviews to inflate their egos by exaggeration and exhibitionism. Some probably wanted advice. Direct questions rarely elicit the *raison d'etre* for behavior, especially, sexual conduct. We also question the validity of the interviews because nearly all persons have "screen memories." These memories distort earlier events; such distortions are maintained regardless of the number of interviews and cross checks. It is easy not only to forget, but to "mis-remember" things that never happened!

Kinsey argues that inasmuch as all types of sexual behavior occur in subhuman species, these patterns are normal for humans. This kind of logic disregards all the ethical, religious, and moral advances mankind has made. His analogy that that which is the commonest is *ipso facto* normal is also incorrect and is the basis for other faulty inferences. Thus, normal human sex behavior is predicated on a high incidence curve and, as mentioned, on a similarity with "mammalian behavior." Both predications are erroneously applied. In volume 1, premature ejaculation is normal, because it is so prevalent and "quite normal among mammals." In volume 2, Kinsey declares that vaginal orgasm is nonexistent because the human vagina has relatively few nerves. This relative insensitivity was deduced by gently stroking the vaginal walls with a glass, metal, or cotton-tipped probe in a gynecologist's office. Kinsey and his gynecologic advisors did not consider the proprioceptivity or deeper sensations of the pubococcygeus and other muscles inserted on the vaginal walls. These muscles are stimulated during the stretching and relaxation produced by copulatory movements. Furthermore, the erect penis certainly cannot be compared with a wisp of cotton on an applicator. There is also a distinct difference between the emotional situation in intercourse and that in the "examination." Most authorities contend that vaginal rather than clitoric orgasm is more desirable. Since subhuman species probably never experience orgasm; the mammalian vagina is no doubt merely a receptacle for the deposit of semen. In the human, however, genital union is associated with impulses that involve the total personality.

Kinsey also abandons the whole medical concept of perversions and puts heterosexuality on the same level with homosexuality and animal contact. Specifically, six sexual "outlets," masturbation, spontaneous nocturnal emissions, petting, heterosexual intercourse, homosexual contact, and animal contact, are described. One can imagine what conclusions perverts, especially homosexuals, will draw from such peculiar approval. In volume 1, 37% of males had experienced some homosexual contact; thus Kinsey created the myth of a new national disease—homosexuality! In arriving at these fantastic figures, prepubertal and adolescent sex play, such as mutual exploration of the genitals, were included under homosexual contact. He did not differentiate early homosexual contact, homosexual tendencies, and overt homosexuality. By such reasoning, if all persons who ever received a ticket for a traffic violation were considered law breakers, then over 75% of the population of the United States would be criminals. Kinsey was probably duped by many of his homosexual volunteers, who used him for their own specific purposes. Male homosexuals diminished their guilt by proving that everyone has homosexual tendencies (they convinced all their friends to volunteer, thus increasing the percentage of homosexuals). On the other hand, Kinsey is surprised that his percentages of female homosexuals were low. He overlooked hidden lesbians who did not reveal themselves, especially those living in heterosexual marriages because of social and economic advantages.

His yardstick of sexual satisfaction is also faulty because he assumes that orgasm is orgasm regardless of how it is achieved. To Kinsey, women who have a high score of sexual "climaxes" are sexually well adjusted. Hence, he ignores the basis for mature human sexual behavior, namely, that something called "love" exists. The healthy sex act consists of very complex psychological phenomena. It depends on the spiritual merger of one personality with another. The sex impulse in humans is tied to the deepest emotions and should result in what is called true love in the finest sense. Love simply cannot be measured on an IBM machine! Orgasm per se means nothing. Orgasm is present in many neuroses, yet the whole personality is sick. For instance, if a woman is frigid in her marriage and can only experience orgasm in a clandestine extramarital relation, orgasm is not a certificate of health but of neurosis. The same applies to a woman who requires perverse acts to achieve orgasm. This is why we differ with Kinsey on the incidence of frigidity. He contends that, as a result of counting "climaxes," only 10% of women are frigid. Because we stress quality rather than quantity in healthy sexual response, frigidity is much higher, perhaps, closer to 75%. It is so widespread in our culture that it is the emotional plague.

Kinsey's greatest error is his contention that most of the stimulation in a woman during coitus is derived from the external areas of the vulva, the outer edges of the labia, and the clitoris with the pubic areas of the partner. Thus he apparently elevates the skin, hair, and pubic bone of the male to the sex organs. He further contends that girls who pet to orgasm before marriage have a better chance of achieving sexual adjustment in marriage; that girls who do not pet are apt to remain unmarried; and that girls who pet acquire some wisdom in choosing a husband and are less nervous. Such advice is scientifically wrong. There is no premium for premarital petting to orgasm. There are no penalties for not indulging in this manner. Experience proves that neurotic girls are the most persistent petters and that emotionally healthy girls usually reject sex without love. Successful marriage and sexual adjustment are based more on gradually established confidence, liking, and mutual respect than on any premarital trial and error sexual processes.

The biting attack on single school teachers is unjustified. There are just as many unhappily married women as single and half-contented women. Is a climax certificate necessary before the single woman is eligible to aid in the guidance of our youth? Kinsey also finds that women are sexually stimulated more by romantic movies, romantic literature, and being bitten. Many volunteers must have been peculiar if they enjoyed being bitten in the sex act. Normal women would object to this procedure. Only neurotics—those who enjoy pain as pleasure—would enjoy being bitten. Hence the sample must have been loaded with atypical and masochistic women. Kinsey, on the basis of correlation with declining hormonal levels (17-ketosteroids) thinks that man's sexual peak is reached in his teens. He overlooked the fact that many neurotic men become impotent after obtaining the "forbidden" (sex contact with wife). Also, some impotent men are hypochondriacs and lose interest in sexual activity because of "heart trouble" or high blood pressure. If their neuroses are treated and their hypochondriacal symptoms relieved, many are sexually adequate up to the age of 60 or 70. Kinsey recognizes that cultural taboos toward sex are very powerful in women, yet he expects them to respond as rapidly in orgasm as men. The peak of sexual excitement will nearly always be much slower in the female because, consciously or unconsciously, most females in the reproductive age fear pregnancy (even when contraceptives are used). Kinsey dismisses this fear, stressing the safety of contraceptives.

Kinsey's nonpsychiatric approach cannot elicit neurotic tendencies. He refers to husbands who encouraged their wives' infidelity. These neurotic men are usually bisexual, impotent, or philanderers. The exculpation then justifies the husband's own sex behavior and alleviates the wife's guilt. Obviously, therefore, the answers to questions on sex behavior are of little value. What is important, however, is the interpretation of the underlying motivations for this behavior! Kinsey ignores this fundamental factor of dynamic psychiatry. He consistently sticks to behavioristic superficialities and refuses to interpret his data on female sexual behavior according to the well-established principles of dynamic psychiatry and psychosomatic gynecology. In the former, he completely neglects the dynamic unconscious; hence, neurosis. In the latter, he refuses to acknowledge that there is an interaction and interdependence of emotions and bodily functions accounting for sexual symptomatology and behavior.

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BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Privileged Communications: Need for Establishment of Physician-Patient Relationship.—This was an action to recover on a life insurance policy issued to the deceased president of Ranger, Inc., the plaintiff. From a judgment in favor of the defendant insurance company, the plaintiff appealed to the United States court of appeals, sixth circuit.

In 1943 the deceased had been hospitalized for one day for the removal of a birthmark or a mole on the top side of his face. He was discharged as "recovered" the same day, with Dr. Ackerman as the attending physician. The deceased died in 1948 of metastatic malignant melanoma, which the proof showed to be a form of cancer. At the trial Dr. Ackerman was called as a witness by the defendant and testified over the plaintiff's objection that, for a period of several months prior to 1943, he had observed a small growth on the deceased's face that had a distinctly black appearance and that it was his opinion that just prior to its removal the growth was changing in its characteristics and becoming larger. Dr. Hand, one of the expert witnesses, stated that, in his opinion, there was a direct connection between the tumor that was growing larger in 1943 and the deceased's death in 1948 and that the deceased had a malignant tumor in January, 1947, when the policy was issued.

The plaintiff contended that the testimony of Dr. Ackerman was inadmissible as privileged under the well-established physician-patient rule. Michigan Statutes Annotated provides: "No person duly authorized to practice medicine or surgery shall be allowed to disclose any information which he may have acquired in attending any patient in his professional character, and which information was necessary to enable him to prescribe for such patient as a physician, or to do any act for him as a surgeon: . . ." It seems clear, said the court, that the patient or his personal representative may invoke the privilege and also that the widow beneficiary of an insured may do so. The defendant contended that a business beneficiary as contrasted with a relative beneficiary can not invoke the privilege, but the court said that an assignee of the beneficiary has the status to invoke the privilege. Such privilege may be waived, however, the court continued. In the present case, the wife of the deceased gave written authorization to the physicians who had treated her husband to furnish to the representative of the insurance company who was investigating the case the facts pertaining to the deceased's illness and cause of death. The defendant claims this was a waiver of the privilege. The court, however, held otherwise and pointed out further that, although the death certificate was properly admitted in evidence, it did not operate as a waiver of the privilege so as to permit the physician who made out the certificate to testify generally about the patient's condition. Nor was the privilege waived by statements in the proof of death furnished to the insurance company. However, the evidence of Dr. Ackerman was admitted by the trial court on the theory that the physician-patient relationship had not come into existence at the time Dr. Ackerman noticed the change in the growth on the deceased's face. There is some conflict in the evidence on this point. Dr. Ackerman and the deceased were friends socially and saw each other frequently before Dr. Ackerman became professionally interested in the case. What he observed during that period of time and what could be also observed by any other person in similar contact with the insured is not covered by the rule of privilege. As to the exact time when Dr. Ackerman made the observation about the change in the size and characteristics of the growth, which the evidence shows was "just prior to its removal," the trial judge found as a fact, before admitting the testimony, that the professional relationship did not then exist. In our opinion, said the court of appeals, this preliminary finding of fact is fairly supported by the evidence and must be accepted on appeal. The plaintiff contended, however, that, although the relationship did not exist at that time, the observation by Dr. Ackerman was privileged because it was used by Dr. Ackerman, when later employed, in making his diagnosis and prescribing the treatment. We do not agree, said the court of appeals. The statute uses the conjunctive "and," rather than the disjunctive "or," and clearly implies that both conditions must exist in order to make the testimony privileged, namely, (1) the professional relationship and (2) that the information was necessary to enable the doctor to prescribe.

The plaintiff also objected to the testimony of Dr. Hand as being privileged. The evidence shows that the physician-patient relationship existed between Dr. Hand and the deceased. Much of the testimony of this witness was in the nature of expert medical testimony concerning skin diseases, pigmented moles, and melanoma in general, without reference to the deceased, and did not violate the rule. The trial judge carefully limited the testimony, with respect to the deceased, to the facts that the deceased consulted him professionally, the dates of attendance, and the presence of the mole. Testimony by a physician about dates of attendance, said the circuit court of appeals, is not privileged. The presence of the mole on the side of the deceased's face was established by other competent testimony, and any error in receiving Dr. Hand's testimony in that respect was not prejudicial. This and other contentions of the plaintiff were denied, and the judgment in favor of the defendant was affirmed. *Ranger, Inc. v. Equitable Life Assurance Society of United States, 196 F. (2d) 968 (1952).*

BUSINESS PRACTICE

The following material is based on a public relations manual issued by the Public Relations Department of the American Medical Association.—ED.

INSURANCE PLANS

Because medical fees are the basis for much criticism of the medical profession, voluntary health insurance plans that assist the patient in paying his medical and hospital expenses greatly improve the doctor-patient relationship. Physicians can help the profession and the patient by promoting such insurance plans. It is an especially good idea to recommend these plans to patients who seem to have difficulty in meeting their medical expenses. The success of voluntary health insurance plans is the best proof that the private system of providing medical benefits is better than government control.

The physician can also aid patients in using their policies. Before a surgical procedure, for example, the doctor can discuss insurance coverage when talking about the fee for the operation. Then the patient is prepared for just how much of the cost he will have to bear. Because many persons do not understand insurance and also do not bother to read the "fine print," the physician may have to explain the policy to a patient. This often requires great tact, especially when a patient learns he has a policy that takes away in fine print the benefits outlined in large print. The physician and his office should help process insurance claims quickly and correctly. The patient identifies the insurance company with the doctor and the hospital, and, if his rightful claims are not settled to his satisfaction, he may be bitter toward all three.

In a few instances, physicians have been guilty of increasing their fees so that patients could get larger amounts from insurance companies or of listing a major operation when a minor operation was actually performed. Such fraud cheats the doctor himself in the long run, for it boosts insurance premiums, makes it necessary to reduce policy benefits, and eventually dries up the source of the physician's fees. Appropriate action should be taken by mediation committees of medical societies when such frauds are discovered. Though there are inequities in insurance payments, the doctor should work through his medical society to correct them. He should promote voluntary health insurance plans and cooperate with the patient and the insurance company to the best of his ability.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Dermat. and Syphilol., Chicago

68:363-480 (Oct.) 1953

Sherlock Holmes as Dermatologist with Remarks on Life of Dr. Joseph Bell and Sherlockian Method of Teaching. J. V. Klauder.—p. 363.
Streptomycin in Treatment of Cutaneous Tuberculosis. L. Adoni.—p. 378.
Carbuncle Caused by Gaffkya Tetragena Treated with Oxytetracycline (Terramycin). I. Zeligman and S. J. Sinesi.—p. 382.
Observations on Peripheral Circulation in Psoriasis. S. E. Huff and H. L. Taylor.—p. 385.
Corrective Surgical Planing of Skin: New Technique for Treatment of Acne Scars and Other Skin Defects. A. Kurtin.—p. 389.
Multiple Superficial Epitheliomatosis: Spectroscopic Study. W. A. Rosenberg.—p. 398.
Role of Colloidal Oatmeal in Dermatologic Treatment of the Aged. M. L. Grais.—p. 402.
*Correlation of Rate of Growth with Histologic Characteristics of Basal Cell Carcinoma. H. A. Teloh.—p. 408.
Isoniazid in Treatment of Chronic Lupus Erythematosus. B. Appel, G. R. Baler and E. F. Dougherty.—p. 417.
Pseudoainhum: Report of Congenital Case Involving Several Fingers and Left Wrist. A. Neumann.—p. 421.
Inhibition of Tyrosine-Tyrosinase Reaction by Microsporum Audouini: Preliminary Report. H. M. Robinson Jr., F. H. J. Figge and E. S. Bereston.—p. 428.
*Axillary Odor: Experimental Study of Role of Bacteria, Apocrine Sweat, and Deodorants. W. B. Shelley, H. J. Hurley Jr. and A. C. Nichols. —p. 430.

Rate of Growth of Basal Cell Carcinoma.—According to Teloh basal cell carcinomas may exhibit widely varying rates of growth. On the one hand, a small, circumscribed, nonulcerated lesion may have been present for a number of years and may well merit the term nevus or hamartoma; on the other hand, a lesion with a similar histological picture may progress slowly but inexorably, with eventual invasion and destruction of large areas of tissue. In order to correlate biological behavior of basal cell carcinoma with variations in histological architecture, Teloh studied 100 basal cell carcinomas of the skin with reference to size, duration, and presence of various histological characteristics. The mean growth ratio (size in millimeters to duration of tumor in months) was compared with histological characteristics. The slowly growing basal cell carcinomas showed a predominance of the following characteristics: occurrence in younger patients, presence of peripheral palisading, cystic change, and adenoid change. The rapidly growing tumors were characterized by a high incidence of marked inflammation and evidence of invasion of surrounding tissue. In most comparisons, the differences in mean growth ratios were not statistically significant but indicated the advisability of further study of the problem. A significantly greater degree of inflammation and centrifugal invasion was noted in rapidly growing tumors.

Axillary Odor.—In studying the physiology of the apocrine gland, Shelley and associates were impressed by the lack of appreciable odor in pure apocrine sweat as it initially appears on the skin surface. It was noted that on standing such sweat developed a definite foul odor, which increased in intensity as time progressed. The realization of this fact prompted an investigation of axillary odor, with particular reference to the specific roles of bacteria, apocrine sweat, and deodorants. It was found that axillary micro-organisms acting on the apocrine sweat in vitro promote the development of the typical acrid axillary body odor in a few hours. Exclusion of these organisms (sterile apocrine sweat) or inhibition of their growth (addition of hexachlorophene to the sweat) prevents any odor from developing. The intensive use of hexachlorophene detergent preparations abolishes the axillary odor for more than 18 hours in most persons. The presence of hair greatly increases axillary odor, since it acts as a collecting site for axillary secretions, debris, keratin, and bacteria. Shaving and careful washing of the axilla eliminate odor for more than 24 hours. Pure eccrine sweat, whether sterile or unsterile, neither has nor develops an odor. Eccrine sweat contaminated with sebum, keratin, or debris develops odor presumably as a result of bacterial action. This odor is mild and very distinct from the odor developing in pure apocrine sweat. The role of the eccrine sweat in the production of axillary odor consists of an accentuation of bacterial growth and also the volatilization of the odoriferous compounds derived from apocrine sweat. No significant reduction in eccrine or apocrine sweating was seen after the use of preparations containing aluminum salts, but the aluminum preparations had demonstrable deodorant activity. Daily applications of these substances abolish or alter the usual axillary odor in many persons for 12 to 18 hours. This deodorant activity in the case of aluminum chloride is based on antibacterial action and a chemical effect on the odoriferous products.

A.M.A. Arch. Ind. Hyg. & Occupat. Med., Chicago

8:299-390 (Oct.) 1953

Relationship Between General Practitioner and Industrial Physician. E. F. Lutz.—p. 299.
Experimental Studies on Cancerigenesis of Synthetic Liquid Fuels and Petroleum Substitutes. W. C. Hueper.—p. 307.
Methyl Chloride Intoxication: Report of 15 Cases. H. Hansen, N. K. Weaver and F. S. Venable.—p. 328.
Toxicity and Health Hazards of Boron Hydrides. E. H. Krackow.—p. 335.
*Occupational Allergic Reactions Among Workers in Penicillin-Manufacturing Plant: Simple and Inexpensive Method of Diagnosis and Treatment. A. E. Roberts.—p. 340.
Excretion of Diazotizable Metabolites in Man After Aniline Exposure. D. L. Hill. —p. 347.
Studies on Toxicity and Mechanism of Action of Some New Insecticidal Thionophosphates. K. P. DuBois, J. Doull, J. Deroin and O. K. Cummings.—p. 350.
Applications of X-Ray Diffraction Analysis in Environmental Field. D. Lennox and J. Leroux.—p. 359.
Toxicity Studies of Acetone Cyanohydrin and Ethylene Cyanohydrin. F. W. Sunderman and J. F. Kincaid.—p. 371.
Toxicity and Hazard of Diisobutyl Ketone Vapors. C. P. Carpenter, U. C. Pozzani and C. S. Weil.—p. 377.
Semiportable Air-Sampling System. L. J. Leach, R. H. Wilson, K. E. Lauterbach and others.—p. 382.

Allergic Reactions Among Workers in a Plant Manufacturing Penicillin.—Roberts presents three cases of occupational allergy to penicillin, two of which were of the respiratory and one of the cutaneous type. The symptoms and signs were so severe that the workers would not have been able to continue their work had they not obtained relief. The customary manner of disposition of employees in whom symptoms and signs of allergy to penicillin developed has been active treatment of cutaneous lesions and respiratory episodes. If recurrent attacks precluded regular employment, the worker was then permanently discharged. It occurred to Roberts that if hyposensitization could be achieved economically and with relative certainty employees would benefit by being able to continue working and the employer would benefit by diminished absenteeism and labor turnover. Roberts used the same preparations of allergenic suspensions for cutaneous testing and for hyposensitization in the three cases presented. The workers exhibited some degree of sensitivity to penicillin, according to the results of the scratch tests, before hyposensitization. As little as 24 units of penicillin injected subcutaneously was sufficient to cause both local and systemic reactions in one highly sensitive person. The three patients became asymptomatic during the courses of hyposensitization and have remained free from symptoms in the working environment during

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Titles marked with an asterisk (*) are abstracted.

a follow-up period of several months. After hyposensitization, none of the patients demonstrated a positive reaction to scratch tests at either the 20 minute or the 24 hour interpretation.

A.M.A Arch. of Surgery, Chicago

67:493-628 (Oct.) 1953

*Hürthle Cell Carcinoma. I. S. Goldberg.—p. 495.
Urological Complications Following Abdominoperineal Resection of Rectum. G. O. Baumrucker and J. W. Shaw.—p. 502.
Transverse and Muscle-Splitting Abdominal Incisions. L. T. Palumbo and I. A. Katz.—p. 514.
Differential Hypothermia for Intracardiac Surgery: Preliminary Report of Pump-Oxygenator Incorporating Heat-Exchanger. E. C. Pierce and V. B. Polley.—p. 521.
*Adequate Breast Biopsy: Experience in 1,000 Consecutive Personal Cases. T. A. Shallow, F. B. Wagner and R. E. Colcher.—p. 526.
LaRoque Approach to Inguinal Hernias in Pediatric Patients. W. W. Hoback and G. D. Vermilya.—p. 537.
Experimental Subphrenic Abscess. E. Hoffman.—p. 540.
Complications Associated with Use of "Controlled Hypotension" in Anesthesia. L. J. Hampton and D. M. Little Jr.—p. 549.
Simultaneous Quadrilateral Gangrene. N. D. Wilensky, M. M. Fisher, A. Moldovan and G. J. Gherardi.—p. 557.
Primary Tumors of Rib: Review of Literature and Report of 11 Cases. L. A. Hochberg.—p. 566.
Leiomyoma of Esophagus. J. R. Wilder and S. W. Moore.—p. 595.

Hürthle Cell Carcinoma.—Lesions formerly known as Hürthle cell tumors of the thyroid, once thought to be benign but now considered malignant and renamed Hürthle cell carcinoma, appeared in surgical specimens of the thyroid glands of 22 (1.7%) of the 1,330 patients who underwent subtotal thyroidectomy during the period 1927-1952 at either the Yale University Surgical Service or the Grace-New Haven Community Hospital. Solitary adenomas occurred 486 times in this series, and malignant thyroid tumors were found in 73 patients. The incidence of Hürthle cell carcinoma was 4.5% of solitary adenomas surgically excised and 30% of the malignant thyroid tumors. Nine tumors were of the trabecular type, seven of the alveolar type, and two of the papillary type; the remaining four tumors were mixed, with trabecular, alveolar, and large follicular elements in various combinations. Blood vessel invasion was present in eight tumors, but in only one case were distant metastases noted. Hürthle cell carcinoma can metastasize extensively, however, and it is on this basis that it must be considered malignant. Clinically, it resembles a benign adenoma. Proper management of this disorder requires that all solitary nodules of the thyroid be surgically excised, preferably by lobectomy. Radical neck dissection should be reserved for those cases in which there is clinical evidence of spread of the tumor or in which there is residual or recurrent tumor. External irradiation and administration of radioactive iodine have not proved effective in treating Hürthle cell carcinoma.

Adequate Breast Biopsy.—Of 1,000 consecutive breast biopsies done in the past 10 years by the authors, 740 revealed benign lesions and 260 malignant ones. The benign lesions were divided as follows: cystic hyperplasia, 619 cases; fibroadenoma, 86 cases; duct papilloma, 31 cases; gynecomastia, 29 cases; lipoma, 12 cases; fibrofatty tissue, 8 cases; fat necrosis, 3 cases; tuberculosis, 2 cases; plasma cell mastitis, 2 cases; and supernumerary breasts, 2 cases. The malignant lesions were divided as follows: carcinoma, 256 cases (scirrhous, 186; medullary, 45; duct cell, 18; and mucinous 7), and sarcoma, 4 cases (fibrosarcoma, 2; cystosarcoma phyllodes, 1; and Hodgkin's disease, 1). The authors feel that prompt biopsy of any localized area varying from the surrounding tissue is necessary for the earlier diagnosis of breast cancer and that "watchful waiting" is a dangerous policy that may prove harmful to the patient. To be adequate, breast biopsy must consist of the removal of sufficient tissue to reveal the presence of any obvious or occult cancer by immediate thorough pathological examination. Wide excision biopsy is particularly indicated when the clinical diagnosis is thought to be a localized cystic hyperplasia; cancer was associated with cystic hyperplasia in 15.4% of the total cases of cancer in the authors' series. All patients with discharge from the nipple are suspected of having cancer, whether or not a mass is palpable in the breast; 18.3% of patients with nipple discharge had cancer. In these cases, wide excisional biopsy is indicated, since multiple lesions are frequently present. When cancer of both breasts is suspected, bilateral biopsy should be performed, even if examination of the material from the more suspicious one reveals a benign lesion; cancer existed in the less suspicious breast of 3.1% of patients with cancer in the present series. Recurrent tumors of the breast deserve biopsy just as promptly as the initial ones, since the chances of cancer are just as great. Biopsy of the male breast should not be neglected. There are no clinical signs that reassure against cancer; it was found in 13.5% of the patients in the cancer group who had not demonstrated any clinical signs of it.

American Journal of Clinical Pathology, Baltimore

23:951-1060 (Oct.) 1953

Classification of Hypoprothrombinemias Based on State of Prothrombin in Human Blood. A. J. Quick, F. T. Flood and C. V. Hussey.—p. 951.
Chronic Atrophic Gastritis: Histopathologic Study of Gastric Mucosa of Patients with Gastritis Diagnosed by Gastroscopy. E. D. Palmer and V. M. Smith.—p. 965.
Paroxysmal Nocturnal Hemoglobinuria with Hemosiderin Nephrosis. E. J. Heitzman, J. S. Campbell and M. Stefanini.—p. 975.
Terminology of Blood Groups. A. S. Wiener.—p. 987.
Metastasis to Liver in Portal Cirrhosis. J. B. Wallach, W. Hyman and A. A. Angrist.—p. 989.
Enterochromaffin and Pancreatic Alpha Cells: Comparison. J. H. Fodden. —p. 994.
Effects of Monosaccharides and Disaccharides on Beta Cells of Islets of Langerhans. S. T. Nerenberg.—p. 999.
*Experiments with Chemicals Noxious to Pancreatic Alpha Cell. J. H. Fodden.—p. 1002.
Pathologic Changes in So-Called Cat-Scratch Fever: Review of Findings in Lymph Nodes of 29 Patients and Cutaneous Lesions of 2 Patients. T. Winship.—p. 1012.

Experimental Chemical Injury to Pancreatic Alpha Cells.—Fodden points out that the pancreatic islet tissue is again the focus of attention as a possible source of another hormone concerned with the sugar metabolism. A chemical factor with hyperglycemic properties has been presumed to originate in the alpha cells of this endocrine system. Methods of its preparation from the pancreas, and its isolation from simultaneously extracted insulin have served to define its identity; the crystalline form of the substance has recently been described. In addition, chemical means have been used to injure the alpha cells so that any effects of the deprivation of their secretion on the living organism may be studied. This paper is concerned with experiments with the two chemical compounds: cobaltous chloride and decamethylenediguanidine (known also as synthalin A). Cobaltous chloride caused degenerative morphological changes in many of the alpha cells. Metabolic aberrations did not ensue, either in normal or in alloxan-diabetic rabbits. Decamethylenediguanidine hydrochloride, known to initiate cytological abnormalities consistent with the hyperfunction-exhaustion hypothesis of secretory cells, produced hypoglycemia. In normal animals, its trend was uncomplicated by ketonemia or ketonuria; in animals with alloxan-diabetes, a ketotic and lipemic state resulted. It was believed that a chemical nesidiectomy was produced. The suggestion is made that, in diabetes resulting from deficiency of insulin and in which there is also functional inadequacy of alpha cells, glyconeogenesis from fat must fail and a state of ketosis result.

American J. Digestive Diseases, Fort Wayne, Ind.

20:293-330 (Oct.) 1953

Front and Side-View Cholecystography, with Study of Angle of Vesicular Erection, of Volume of Gall-Bladder and of Volumetric Coefficient of Evacuation. G. Albot, J. Toulet, G. F. Bonnet and C. Moullart. —p. 293.
A- and B-Cells of Pancreatic Islets as Sources of Antagonistic Hormones Glucagon and Insulin: Shift of Ab-Relation in Diabetes Mellitus. H. Ferner.—p. 301.
Anorexigenic Effect of Sustained-Release Dexedrine Preparations. E. P. Gelvin, T. H. McGavack and S. Kenigsberg.—p. 307.
Observation on Influence of Tapeworm Infestation in Dog on Secretion of Intestinal Juice. W. Koskowski and M. Mahfouz.—p. 313.
Multiple Perforations Occurring During Treatment of Ulcerative Colitis with ACTH. J. F. Pessel, E. B. Beairsto, M. H. Edwards and others. —p. 318.
Hypopotassemia Due to Cardiospasm. M. J. Barrash and M. M. Kirshen. —p. 322.

American Journal of Medicine, New York

15:439-590 (Oct.) 1953

Genetic and Biochemical Aspects of Wilson's Disease. A. G. Bearn. —p. 442.
*Liver Dysfunction in Hepatolenticular Degeneration: Review of 11 Cases. E. C. Franklin and A. Bauman.—p. 450.
Hypokalemia in Liver Cell Failure. E. L. Artman and R. A. Wise. —p. 459.
Pulmonary Function in Sarcoidosis: Results with Cortisone Therapy. D. J. Stone, A. Schwartz, J. A. Feltman and F. J. Lovelock.—p. 468.
Therapy of Sarcoidosis. F. J. Lovelock and D. J. Stone.—p. 477.
Renal Complications of Sarcoidosis and Their Relationship to Hypercalcemia: Report of Two Cases Simulating Hyperparathyroidism. G. Klatskin and M. Gordon.—p. 484.
*Physiologic Evaluation and Management of Chronic Bone Marrow Failure. V. Loeb, C. V. Moore and R. Dubach.—p. 499.
Radioactive Iron Absorption in Siderosis (Hemochromatosis) of Liver. R. E. Peterson and R. H. Ettinger.—p. 518.
Metabolic Studies in Gout with Emphasis on Role of Electrolytes in Acute Gouty Arthritis. M. H. Levin, J. B. Rivo and S. H. Basset. —p. 525.
*Correlations of Structure and Function and Mechanisms of Recovery in Acute Tubular Necrosis. J. Oliver.—p. 535.
Inheritance of Diseases Primary in Muscles. F. E. Stephens.—p. 558.

Liver Dysfunction in Hepatolenticular Degeneration.—The classic notion regarding hepatolenticular degeneration (Wilson's disease) is that, although signs of hepatic dysfunction are found at necropsy, they do not appear during the patient's lifetime. Twelve cases of the disease have been seen at the Montefiore Hospital in New York since 1934. One was not included in this review because the patient was observed only for five days. Of the 11 cases studied, clinical signs of liver disease were apparent in 7. Five of these patients showed symptoms of liver disease prior to any neurogenic disorder; in the other two, symptoms and signs of hepatic failure appeared during the course of the illness. Laboratory findings confirmed the clinical impression of hepatic insufficiency; they added little in the way of diagnosis. In the six livers examined at post mortem, two of which were from patients who had shown no hepatic symptoms while living, the findings were typical of advanced multilobular cirrhosis. From this study it appears that frank hepatic decompensation is common in hepatolenticular degeneration.

Chronic Bone Marrow Failure.—With the physiological techniques currently available, the erythropoietic equilibrum in patients with diseases characterized by failure of bone marrow function can be evaluated by measuring rates of red blood cell production and destruction. Data derived from these techniques were applied to the clinical management of 10 patients with chronic bone marrow failure. It was possible to demonstrate that (1) increased destruction of erythrocytes was partly responsible for the anemia in some cases and (2) cortisone or corticotropin (ACTH) administration occasionally increased the rate of erythrocyte formation. When splenectomy was performed under these circumstances, partial to marked clinical improvement occurred because the hemolytic component of the anemia was corrected and/or erythropoiesis was accelerated. The latter provides evidence to indicate that an abnormally functioning spleen may depress the marrow function. It is emphasized that the seven splenectomies performed in this series were done only after extensive study and after increased hemolysis or marrow stimulation by cortisone or corticotropin had been demonstrated. There is no intent to recommend splenectomy routinely in the treatment of chronic bone marrow failure.

Acute Tubular Necrosis.—A correlation of structure and function in acute tubular necrosis, or acute renal failure, has been made, mostly on the basis of the author's microdissections. Functional evidence of a dual cause—ischemia and renal poison—was found; structurally, it was demonstrated that there are two types of lesions in the tubules, tubulorhexic and nephrotoxic. There was focal ischemia in renal poisoning. In the first stage of the disease, the oliguric, or perhaps anuric, phase, certain functional disturbances are associated with certain structural changes in a definite pattern; namely, (1) reduction in renal blood flow and glomerular filtration with empty glomerular capillaries having tufts collapsed but intact; (2) albuminuria with protein in the capsular space; (3) hemoglobinuria with heme pigments in the capsular space and tubule lumens and heme casts; (4) loss of proximal tubule function and inability to concentrate urea and creatinine, to conserve electrolytes, and to extract *p*-aminohippurate with the beginning of tubular damage, that is, the lack of proximal absorption of heme pigments, increasing to tubulorhexic and nephrotoxic necrosis; (5) relative maintenance of glucose Tm with the structural integrity of the first third proximal convolution; and (6) persistence of reduced renal blood flow after initial attack with tubular leakage, interstitial edema and reaction, and increased intrarenal tension. If this early stage does not lead to death from uremia, a diuretic phase occurs as the result of reparative phenomena. The onset of diuresis as a result of absorption of interstitial edema, increasing blood flow, and filtration, with continuing depression of tubular absorption of water, is associated with distended glomerular capillaries and normal appearing tufts and persisting tubular damage, both nephrotoxic and tubulorhexic, with especial involvement of the proximal convolution. Persisting evidence of abolition of the proximal tubule function, that is, inability to concentrate urea in the urine, to conserve electrolytes, and to extract *p*-aminohippurate, relates to the following structural changes: extensive atypical regeneration of renal epithelium—absence of mitochondria and consequent reduced enzymatic content of new renal epithelium—and excess epithelial proliferation and tubular dilatation. When the effects of these reparative processes do not cause death, recovery during the late diuretic stage is gradual over weeks or months of tubular functional ability, with possible eventual clinical recovery; during this time there is a slowly progressive maturation of the regenerated tubular epithelium with ultimate reconstitution of the original structures, including mitochrondrial organelles with their enzymatic content. Renal function after clinical recovery is adequate but remains below the lower limits of normal; this is explained by the loss of some nephrons from irreparable tubulorhexic damage and associated hypertrophy and hyperplasia of others.

American Journal of Psychiatry, New York

110:241-320 (Oct.) 1953

Biological Psychiatry. A. E. Bennett.—p. 244.
Plan for Rehabilitating Improved Psychotic Patients. F. Schnadt.—p. 253.
Importance of Constitution in Psychiatry. G. Langfeldt.—p. 261.
*Level of Achievement After Lobotomy: Study of 1,000 Cases. W. Freeman.—p. 269.
Contribution of Father to Mental Health of Family. L. Bartemeier. —p. 277.
Patterns of Behavior Disturbance Following Cataract Extraction. L. Linn, R. L. Kahn, R. Coles and others.—p. 281.
Effect of Infantile Disease on Ego Patterns. R. R. Grinker.—p. 290.
Geriatric Ward Psychiatry: Techniques in Psychological Management of Elderly Psychotics. R. Ginzberg.—p. 296.

Achievement after Lobotomy.—Most follow-up studies after lobotomy have been performed on patients remaining in the hospital. Freeman feels that tracing patients who have been discharged from the hospital and returned to the community is a proper field of investigation. The present study aims at delineating the patient who has had lobotomy after stabilization. The 622 patients who had Freeman-Watts prefrontal lobotomy were followed for at least 2 years and many of them for more than 10 years or until death. The other main group consisted of 498 patients subjected to transorbital lobotomy and followed for 1 year and most for periods up to 5 years or until death. Of these 1,120 patients, 100 were dropped for various reasons, which left 1,020 for investigation. Personal interviews together with letters from patients and relatives, telephone conversations, and reports from physicians and hospitals were utilized. The data were assembled on worksheets and transferred to punch cards for greater ease in handling. The cards were divided into two groups based on social adjustment at the end of the second year after prefrontal lobotomy and after the first year for transorbital lobotomy. There were 444 with good adjustment and 576 with poor adjustment. Patients who adjusted well at the end of two years after lobotomy (one year after transorbital lobotomy) were employed, partly employed, going to school,

keeping house, and otherwise contributing something to the community. Those with poor adjustment were all those in hospital, whether or not they were engaged in some useful occupation, as well as those who remained at home in a dependent condition. The records of the patients were analyzed in an effort to determine the factors responsible for good adjustment. It was found that the level of achievement improved with time. The outstanding feature in a high level of achievement is the short duration of disability. Since community activities and professional competence are possible after lobotomy, it is apparent that the personality downgrading generally attributed to lobotomy should be attributed rather to the devastating effects of the underlying disease process. It is safer to operate than to wait. Transorbital lobotomy yields a higher rate of good social achievement than prefrontal lobotomy, except in hebephrenic schizophrenia.

Am. J. Tropical Medicine & Hygiene, Baltimore

2:757-948 (Sept.) 1953. **Partial Index**

Vectors and Reservoirs of Virus Diseases. K. F. Meyer.—p. 757.
Studies in Human Malaria. G. R. Coatney, A. V. Myatt, T. Hernandez and others.—p. 777.
Treatment of Malaria with Oral or Intravenous Plaquenil: Preliminary Report. M. T. Hoekenga.—p. 805.
Chloroquine and Chlorguanide as Suppressants of Malaria in Guatemala. C. G. Dobrovolny, W. C. White and G. R. Coatney.—p. 808.
Case of Visceral Leishmaniasis in Saudi Arabia. M. L. Tarizzo, H. A. Bracken and D. J. Strait.—p. 846.
Naturally Acquired Yellow Fever in Wild Monkeys of Costa Rica. O. Vargas-Mendez and N. W. Elton.—p. 850.
Influence of Previous Infection of Mice with Schistosoma Mansoni on Challenging Infection with Homologous Parasite. M. A. Stirewalt. —p. 867.
Histopathology of Experimental Schistosomiasis: II. Bisexual Infections with S. Mansoni, S. Japonicum and S. Haematobium. H. E. Meleney, J. H. Sandground, D. V. Moore and others.—p. 883.
Infection of Anopheles Quadrimaculatus, Human Malaria Vector, with Plasmodium Cathemerium, an Avian Malaria Parasite. D. W. Micks and V. McCollum.—p. 930.

Annals Otol., Rhin. and Laryngology, St. Louis

62:607-922 (Sept.) 1953. **Partial Index**

*Some Remarks About Dizziness—Its Diagnostic Significance and Treatment. W. J. McNally.—p. 607.
Hereditary Hemorrhagic Telangiectasia. D. A. Dolowitz, O. N. Rambo Jr. and F. E. Stephens.—p. 642.
Tuberculosis of Oral Cavity. S. G. Castigliano and E. Shigeoka.—p. 662.
Eight Syndromes of Facial Paralysis and Their Significance in Locating the Lesion. K. Tschiassny.—p. 677.
Pharyngeal Pulsion Diverticulum (Transverse Approach). S. L. Perzik. —p. 699.
New Test for Cochlear Reserve in Selection of Patients for Fenestration Surgery. J. F. Jerger.—p. 724.
Experimental Observations on Sound Conduction in Middle and Inner Ear. H. G. Kobrak.—p. 748.
Tectorial Membrane in Theory of Hearing: Significance of Insertion of Tectorial Membrane in Transmission of Sound Vibrations to Hair Cells and Theory of Mechanism of Tone Location in Cochlea. A. C. Hilding. —p. 757.
Epiphrenic Esophageal Diverticulum. F. J. Putney and L. H. Clerf. —p. 803.
Grasses and Cedar Twigs as Foreign Bodies in Bronchi and Lungs of Children. P. L. Mahoney.—p. 818.
Rational Use of Endoscopy in Surgery. F. F. Boyce.—p. 838.
Changing Concept of Tuberculous Tracheobronchitis. J. J. O'Keefe. —p. 848.
Bronchologist's Experiences with Infectious Asthma. F. W. Davison. —p. 859.
Amyloid Tumors of Lower Part of Respiratory Tract and Mediastinum. H. W. Schmidt, J. R. McDonald and O. T. Clagett.—p. 880.

Diagnosis and Treatment of Dizziness.—McNally points out that most writers use the words dizziness or vertigo interchangeably. If a patient complains of dizziness, one must first exclude the possibility that it is a warning sign of imminent labyrinthine invasion in the course of suppurative middle ear disease, either quiescent or active. Fistula and other vestibular tests should be performed at once. Next, evidence should be sought for serious general organic disease, such as cardiovascular or central nervous system lesions that were found in 35% of a consecutive series of 200 cases of dizziness. True Ménière's syndrome or labyrinthine hydrops will be the diagnosis in about 30% of the cases. The remaining 35% of the cases, those in which the dizziness is not associated with cochlear signs or symptoms, are still difficult diagnostic problems and can best be grouped as atypical or pseudo-Ménière's syndrome, constant watch being kept for other diagnostic signs. The treatment of dizziness is still, for the most part, symptomatic. A patient with Ménière's syndrome should be given a thorough trial of medical treatment before surgery is contemplated. Hyosine and its compounds have proved to be among the most effective labyrinthine sedatives. Antihistaminic preparations have been helpful presumably because of their sedative properties. Because of a prevalent theory that labyrinthine hydrops is the result of vascular spasm, vasodilator drugs play an important role in treatment. Nicotinic acid and histamine are the two in commonest use. The operation of choice for Ménière's syndrome, when the disease is unilateral, is labyrinthine ablation. If the disease is bilateral, a differential section of the vestibular portions of both eighth nerves should be considered in the hope of preserving some of the residual hearing.

Blood, New York

8:867-964 (Oct.) 1953

*Oral Treatment of Pernicious Anemia with Small Doses of Vitamin B_{12} Combined with Mucinous Materials Derived from Hog Stomach. G. B. J. Glass and L. J. Boyd.—p. 867.
Quantitative Studies of Influence of Plasma Proteins and Hematocrit on Erythrocyte Sedimentation Rate. A. J. Meyers, V. Trevorrow, A. H. Washburn and E. R. Mugrage.—p. 893.
Microspectrophotometric Estimation of Desoxyribonucleic Acid (DNA) Content of Individual Normal and Leukemic Human Lymphocytes. N. L. Petrakis.—p. 905.
Demonstration of Cytoplasmic Structure in Plasma Cells. H. Braunsteiner, K. Fellinger and F. Pakesch.—p. 916.
Cyclic Neutropenia with Giant Follicular Lymphoblastoma and Lymphosarcoma: Report of Case with Splenectomy. R. P. Natelson.—p. 923.
Coexistent Chronic Lymphatic Leukemia and Polycythemia Vera: Morphologic and Clinical Studies with Particular Reference to Unusual Iron Metabolism. W. F. Bethard, M. H. Block and M. Robson.—p. 934.
Violet Light Microscope: Method for Visual Estimation of Heme in Living Cells. M. H. F. Wilkins and S. de Carvalho.—p. 944.
Factor VII (SPCA): Its Physiopathologic Significance. P. de Nicola. —p 947.

Oral Treatment of Pernicious Anemia.—Small oral doses of vitamin B_{12} combined with intrinsic factor containing mucinous materials processed from the hog stomach were given under rigidly controlled conditions to 20 patients with pernicious anemia. In 14 patients, the following sources of intrinsic factor from animal stomach were used (*a*) commercial gastric mucin powder, (*b*) acetic acid extracts of hog pyloric mucosa, (*c*) mucinous materials precipitated by acetone or by saturation with ammonium sulfate from hydrochloric acid extracts of the hog pyloric mucosa, or (*d*) mucous fractions obtained by further fractionation in the electroconvection apparatus of the previous mucinous materials precipitated with ammonium sulfate. Results obtained in these patients indicated the feasibility of attaining complete clinical remission and suboptimal or optimal hematopoietic responses in patients with pernicious anemia in relapse when doses below 20 mcg. of vitamin B_{12} are given orally in combination with mucinous materials processed by various techniques from the hog stomach and containing intrinsic factor. The provisions are that: (1) the doses of both vitamin B_{12} and intrinsic factor containing materials must be adequate and optimal in regard to their mutual ratio; and (2) the process involved in processing materials containing intrinsic factor does not impair their activity but yields a product sufficiently concentrated. Although at present some such extracts are active orally in such small doses, from 40 to 50 mg. per day, still further refinement appears possible. Six patients were given vitamin B_{12} with an intrinsic factor concentrate from the hog stomach (Bifacton). The hematopoietic responses and clinical remissions obtained in these six patients who received vitamin B_{12} with intrinsic factor concentrate in different batches were uniform in the authors' hands. The doses employed were marginal in order to detect differences in potency, and, although the reticulocyte responses were frequently suboptimal and protracted, the increases in red blood cells were roughly equivalent to those obtained with daily administration of approximately 1 unit of a standard oral antianemic preparation. The vitamin preparation is supplied in strikingly smaller dosages than the standard liver or stomach preparation for

oral use and is fully active in a total daily oral dose of about 50 mg. of intrinsic factor concentrate with 15 mcg. of vitamin B_{12}. Preliminary studies on two of the six patients tend to indicate that the administration of massive single oral doses of the drug repeated at intervals of one week may imitate even more closely the results of parenteral treatment with injectable liver concentrates or vitamin B_{12} than does the administration of this concentrate in small daily doses. The single dose of vitamin B_{12} with intrinsic factor concentrate, which was given once a week to one of these patients, contained 150 mcg. of vitamin B_{12} with approximately 250 mg. of intrinsic factor concentrate. Five consecutive single doses administered at intervals of from 7 to 10 days induced a complete clinical and hematological remission. The studies also indicated that the drug is resistant to boiling and that it maintains its hematopoietic activity after being boiled in water from 30 to 45 minutes at 95 to 100 C. This suggests either that the intrinsic factor of the animal stomach becomes thermostable after the interaction in vitro with vitamin B_{12} or that the product of this binding is thermostable under conditions described.

Delaware State Medical Journal, Wilmington

25:245-278 (Sept.) 1953

Review of Cancer Control Program in Delaware. G. F. Campana. —p. 247.
Mortality from Respiratory Cancer, 1952. C. A. Marshall.—p. 252.
Nursing in Delaware Chest X-Ray Survey. L. G. Riley.—p. 254.
Typhoid Fever and Raw Milk. W. H. Bandy.—p. 255.
Infectious Hepatitis in Rural Community: Report of Mild Outbreak. E. F. Gliwa.—p. 258.

Gastroenterology, Baltimore

25:1-112 (Sept.) 1953

Studies in Chronic Amebiasis: I. Clinical Syndrome. R. A. Radke.—p. 1.
Id.: II. Evaluation of Treatment Technics. R. A. Radke.—p. 9.
Studies on Blood Serum Proteolytic Enzyme with Particular Reference to Gastric Secretory Function. A. B. Chinn.—p. 14.
Effect of New Quaternary Ammonium Compound on Gastric Secretion and Gastrointestinal Motility. R. A. Roback and J. M. Beal.—p. 24.
Improved Gastric Biopsy Tube—Its Manufacture, Use and Investigative Value. C. E. Rubin, M. B. Goldgraber and C. Smith.—p. 31.
*Aureomycin Proctitis and Colitis: Report of Five Cases. A. P. Klotz, W. L. Palmer and J. B. Kirsner.—p. 44.
Failure of Vitamin B_{12} Therapy to Improve Gastric Atrophy in Pernicious Anemia: Report of Case Studied by Serial Gastric Biopsies. E. S. Finckh and I. J. Wood.—p. 48.
*Gastric Neurilemmoma. M. Dorfman.—p. 56.
Fecal Loss of Various Dietary Nutrients in Dogs Lacking Pancreatic Juice. B. J. Cohen and J. H. Annegers.—p. 67.
Perforated Duodenal Ulcer with Neutropenia and Death in Patient Receiving Phenylbutazone Therapy. E. Beutler and D. M. Bergenstal. —p. 72.

Chlortetracycline Proctitis and Colitis.—The occurrence of proctitis and colitis after the administration of chlortetracycline (Aureomycin) is reported in five patients between the ages of 20 and 64 years. Two patients were given chlortetracycline for respiratory infections, one for suspected amebiasis, one for a stitch abscess after ventral hernia repair, and one for dermatitis involving the hands. Healing of the ulcerative lesions of the colon and rectum occurred in four patients after periods of several weeks to months. The disease was so severe in the fifth patient that ileostomy had to be performed as a lifesaving emergency procedure; the mucosa remained inflamed and friable despite the ileostomy and two separate weekly courses of 0.5 gm. of corticotropin. Chlortetracycline thus may cause proctitis and colitis surpassing in importance the original illness for which the antibiotic was prescribed. The incidence probably is greater than has been recognized. The mechanism of the process is not clear.

Gastric Neurilemmoma.—The author reports a case of a gastric neurilemmoma, a specific benign encapsulated nerve sheath tumor, in a 60-year-old man. The patient complained of tarry stools and epigastric pain of one week's duration. He had not had hematemesis but did have weakness and syncope and had lost 10 lb. (4.5 kg.). A large soft tissue mass protruding into the air bubble in the fundus of the stomach was revealed by roentgenologic examination. Exploratory laparotomy revealed a gastric tumor distal to the esophagogastric junction of the greater curvature of the stomach. The main portion of the tumor was outside the wall of the surrounding stomach, and an additional segment of the tumor was observed in the stomach. The tumor had an hourglass configuration. The intragastric portion was ulcerated. Cut section showed the tumor to be friable and to have a somewhat gelatinous mucoid appearance with areas of hemorrhage and some degeneration in the center. Postoperatively, the patient had a psychosis characterized by complete refusal to eat. Despite varied and vigorous therapeutic measures, he followed a downward course and died several months after the operation. Post mortem revealed no other neurogenic tumor in the body. Intra-abdominal neurogenic tumors, such as neurilemmoma, or neurofibroma of the type associated with Recklinghausen's disease, arise mainly from the subserous Auerbach's plexus or in a lesser number from the submucous or Meissner's plexus. There is no consensus regarding the histogenesis. Some workers believe in the Schwannian origin of the tumor, while others consider it to be of mesodermal origin. In contrast to the complex nature of the histogenesis of these tumors, the clinical features are relatively straightforward. The tumors may cause bleeding; they may cause obstruction with epigastric pain, nausea, and vomiting; or they may cause no symptoms. Although the diagnosis of gastric neurilemmoma may be suspected from a careful correlation of the clinical features with the roentgenographic findings, differentiation from other benign gastric tumors may be very difficult or impossible.

Journal of Applied Physiology, Washington, D. C.

6:143-200 (Sept.) 1953

In Vivo Studies of Human Plasmin: Intravenous Injection in Dogs and Rabbits. E. E. Cliffton, D. A. Cannamela and C. Grossi.—p. 143.
Ammonium Chloride Acidosis and Breath Holding. R. C. Stroud.—p. 151.
*Adaptation to High Altitude: Changes in Breath-Holding Time. H. Rahn, H. T. Bahnson, J. F. Muxworthy and J. M. Hagen.—p. 154.
Id.: Respiratory Response to CO_2 and O_2. H. Rahn, R. C. Stroud, S. M. Tenney and J. C. Mithoefer.—p. 158.
Relationship Between Body Composition and Basal Metabolic Rate in Children. S. M. Garn, L. C. Clark Jr. and R. Portray.—p. 163.
Rate of Papaverine Metabolism in Man. S. R. Elek and H. C. Bergman. —p. 168.
Influence of Phosphorylated Hesperidin on Fat Tolerance Curves in Vivo and in Vitro. W. J. Messinger and Y. Porosowska.—p. 173.
Distribution of Visual Threshold. J. C. Peskin.—p. 177.
Mechanical Efficiency in Cycling of Girls 6 to 14 Years of Age. M. E. R. Bal, E. M. Thompson, E. M. McIntosh and others.—p. 185.
Continuous Recording of Blood Oxygen Tensions by Polarography. L. C. Clark Jr., R. Wolf, D. Granger and Z. Taylor.—p. 189.
Antidiuretic Substance in Urine Following Exposure to High Temperatures. K. Hellmann and J. S. Weiner.—p. 194.

Adaptation to High Altitude: Changes in Breath Holding Time.—With a sudden transition from sea level to altitude one can observe that the initially lowered alveolar oxygen pressure slowly increases over the next few days, while the alveolar carbon dioxide pressure falls. This can be explained by a gradual increase in the alveolar ventilation, which reaches a new level at altitude after several days. Thereafter the alveolar gas concentration remains stable and as far as can be judged from the available literature does not differ from that observed in permanent residents of mountain regions. Schneider seems to have been the first to make the interesting observation that the maximal breath holding time was not only reduced initially with the acute exposure to altitude but became increasingly shorter during the next few days of altitude adaptation. It can be shown that with breath holding on air the breaking point is released by a combination of oxygen lack and carbon dioxide excess. Since either of these factors or possibly both seem to be altered during altitude adaptation, it became of interest to repeat similar studies not only after breathing air but also after breathing pure oxygen in order to eliminate the oxygen lack stimulus. Rahn and associates recorded changes in maximal breath holding time as well as the alveolar gas concentrations after breathing air or oxygen in four subjects during a seven day exposure to an altitude of 14,100 ft. (4,300 m.). After the initial exposure to this altitude the breath holding time for air as well as for oxygen was gradually reduced over the next five to seven days. Simultaneously the carbon dioxide differences between the normal resting carbon dioxide level and that obtained at

the breaking point were also reduced. These changes are interpreted as indicating an increased sensitivity of the respiratory system to carbon dioxide. The index of breath holding time is suggested as a simple tool in evaluating respiratory adaptation to altitude.

Kansas Medical Society J., Topeka

54:413-452 (Sept.) 1953

Hysterectomy—Clinical Consideration. C. G. Johnson.—p. 413.
Three and a Half Years Experience with Bone Bank. J. F. Lance. —p. 418.
Venereal Disease Epidemiologic Study in Kansas City, Wyandotte County, Kansas. L. G. B. Byington and H. Wettig Jr.—p. 420.

Kentucky State Medical Assn. Journal, Bowling Green

51:425-472 (Oct.) 1953

Diarrhea in Infants and Children. K. P. Crawford.—p. 425.
Current Trends in Anesthesia and Their Relationship to General Practitioner. L. Francis.—p. 429.
Management of Essential Hypertension. W. C. Gettelfinger.—p. 434.
Urethra of Woman. R. Lich Jr.—p. 437.
Shoulder-Hand Syndrome. G. S. Dozier.—p. 441.
Intestinal Obstruction. R. J. Noer.—p. 449.

Louisiana State Medical Society Journal, New Orleans

105:373-414 (Oct.) 1953

Treatment of Acute Respiratory Infections. C. Parnall Jr.—p. 373.
Treatment of Carcinoma of Skin: Preliminary Statistical Review. C. I. Black and H. W. Jolly Jr.—p. 374.
Drug Reactions of Importance in Daily Practice. J. D. Youman Jr. —p. 380.
Aplastic Anemia; Report of Case Following Chloromycetin Therapy and Infectious Hepatitis. W. J. Hollis and L. E. Hanisch.—p. 385.
*Surgical Intervention for Ectopic Pancreas in Pylorus. G. N. Weiss and F. H. Marek.—p. 389.
Prognosis in Hypertension: Evaluation of 300 Consecutive Cases. F. W. Pickell.—p. 393.
*Ochronosis; Report of Case. T. G. Biggs Jr. and E. Cannon Jr.—p. 395.
Recent Advances in Treatment of Hypertension. J. E. Bechtold.—p. 396.
Report of Supplementary Feeding of First Grade Children in Central Louisiana Town. M. C. Moore, E. P. Rooks and I. H. Peters.—p. 400.

Ectopic Pancreas in the Pylorus.—Surgical intervention for ectopic pancreatic tissue in the pylorus was carried out in a 29-year-old man. The patient had had postprandial pains of the "ulcer type," ate little, and had lost 30 lb. (13.6 kg.) in two years. Stools were normal, and there was no constipation or diarrhea. No specific food dyspepsia was noted. The patient did not respond to an ulcer diet with corresponding administration of methantheline (Banthine). Roentgenologic examination of the stomach revealed a disturbed mucosal relief pattern on the greater curvature; there was pronounced coarseness of the mucosal folds of the stomach, with definite mucosal changes with fixation. There was also a deformity of the duodenal bulb. Abdominal exploration revealed a lesion at the pyloric region of the stomach on the greater curvature. The tumefaction was located subserosally; it was lobulated with a grayish-pink appearance and simulated the gross appearance of normal pancreatic tissue. There was no other evidence of gross disease, and a wedge resection of the involved area was done. A pathologist examined a section of the specimen at the time of the intervention and reported the tissue to be aberrant pancreas. A final gross and microscopic description confirmed this diagnosis. The pancreatic tissue was in the subserosa and muscular coats of the stomach wall. The patient made a complete recovery. Ectopic pancreas in the pylorus should be suspected when a patient presents postprandial pain of the ulcer type, weight loss, and failure of response to ulcer management. A normal gastric analysis should lead to a high index of suspicion of diseases other than peptic ulcer despite peptic ulcer symptoms. The roentgenographic diagnosis is most likely that of a tumor or ulcer, but, coupled with the clinical findings and normal gastric analysis, the possibility of aberrant pancreatic tissue should be strongly considered. Surgical intervention, with a frozen section microscopic report at time of surgery, will confirm the diagnosis, and local excision of the involved area will effect a cure.

Ochronosis.—A 45-year-old man with osteoarthritis of the lumbar, thoracic, and cervical spines and knees was hospitalized for a therapeutic trial with corticotropin (ACTH). Routine Benedict's tests for urine sugar consistently gave a black discoloration. The patient's urine turned brownish-black on standing and alkalization, and the addition of ferric chloride gave a grayish precipitate—findings compatible with alkaptonuria. Prior to corticotropin therapy there was an average eosinophil count of 413 over a period of three days. Corticotropin was given in doses of 40 mg. daily for two days, 60 mg. daily for the next two days, and a maximum dose of 80 mg. daily for two more days. Four days after the start of the corticotropin therapy, the eosinophil count dropped to zero and remained at zero for the next three days. Despite adequate adrenal response to corticotropin as evidenced by the sustained reduction in the eosinophil count, the patient experienced no relief from back pain, and the pain in the right knee became exaggerated with the development of effusion. Corticotropin then was discontinued. Following the report of Cope and Kassander (*J. A. M. A.* **150:**997 [Nov. 8] 1952) on the use of cortisone in ochronotic arthritis, the patient was given a trial of cortisone; treatment was started with 300 mg. daily, decreasing gradually to a maintenance dose of 50 mg. daily. Prompt and complete relief of pain was observed as well as the usual increased sense of well being. Examination of the urine did not show the usual dark brown discoloration of the urine on alkalization or standing. There was a normal and negative reaction to Benedict's solution, and there were negative results to the ferric chloride test. All the original findings of alkaptonuria recurred as soon as the dose of corticotropin was decreased to 50 mg. daily. Reversal of the alkaptonuric signs depending on the dosage of cortisone is in agreement with the findings of Cope and Kassander.

Medical Annals of District of Columbia, Washington

22:517-580 (Oct.) 1953

Cardiac Arrest with Report of Case Successfully Defibrillated. G. W. Ware.—p. 517.
Treatment of Acute Renal Insufficiency. G. E. Schreiner.—p. 531.
Fluid and Electrolyte Therapy: Physiologic and Clinical Aspects. L. K. Alpert, E. Cotlove and A. E. Parrish.—p. 536.
Dissociative Reactions: Dissociation, Double Personality, Depersonalization, Amnesia, Fugue States, Somnambulism, and Hypnosis. H. P. Laughlin.—p. 541.

Minnesota Medicine, St. Paul

36:1009-1104 (Oct.) 1953

The Physician and His Estate. H. A. Blackmun.—p. 1033.
The Doctor as Medical Witness. R. Scallen.—p. 1036.
Country Newspaperman Wants More "Horse and Buggy" Doctors. A. C. McIntosh.—p. 1039.
Problem of Lupus Erythematosus. H. E. Michelson.—p. 1043.
Red Sore Eye Emergency Care. M. A. McCannel.—p. 1046.
*Quinidine Intoxication Occurring During Therapy of Auricular Arrhythmias. R. Berman, C. M. Sadoff and G. B. Gordon.—p. 1052.
The Medical Technologist and the University of Minnesota. W. W. Spink.—p. 1061.
Practical Considerations in Cervical Cytology. D. C. Dahlin.—p. 1065.

Quinidine Intoxication During Therapy of Auricular Arrhythmias.—Complications arising in the course of quinidine therapy for auricular arrhythmia are described in three women and two men. Administration of quinidine in two patients with mitral stenosis was attempted with a total dose of 1.6 to 2 gm. for regulation of auricular fibrillation. Short runs of ventricular tachycardia resulted in one patient, while the other collapsed with apparent cardiac and respiratory failure but revived after artificial respiration. The third patient had diffuse myocardial fibrosis without myocardial hypertrophy. Auricular fibrillation was regulated with a total dose of 3.8 gm. of quinidine. The restoration of sinus rhythm was followed by convulsions and later by cardiac arrest. The patient remained in coma for 19 days after electrical stimulation of the heart and died. The fourth patient had myocardial hypertrophy of undetermined cause with some fibrosis. After an unsuccessful attempt at regulation of auricular fibrillation with a total dose of 3.2 gm. of quinidine, apnea occurred, and the patient was found in a convulsive state, cyanotic and pulseless. A second

attempt resulted in return to sinus rhythm and another convulsive episode similar to the first, and fibrillation recurred. The patient was again given quinidine; this resulted in intractable tachycardia and death. Failure to appreciate the syndrome of convulsion and apparent death as a toxic manifestation of quinidine led twice to unwarranted resumption of quinidine therapy. The fifth patient had auricular flutter with hypertension. Administration of a "test" dose of 0.4 gm. of quinidine was followed by severe nausea and vomiting, respiratory failure, and many convulsions. During the seizure, the flutter changed to fibrillation with subsequent reversion to flutter. Recovery followed artificial respiration. Thus four of the five patients displayed acute cardiorespiratory collapse that was fatal in two. The similar symptoms in these cases can be classified as quinidine shock, characterized by convulsions, respiratory failure, cardiac collapse, absent blood pressure, lack of pulse. It may be of brief duration and may respond to artificial respiration. The syndrome resembles the effect of cerebral embolism. Necropsies were performed in the two fatal cases, but emboli were not found. It is likely that the reactions following quinidine regulation of fibrillation interpreted in the past as cerebral emboli often represented in reality the quinidine intoxication syndrome occurring shortly after regulation. General recognition of the possibilities of these serious reactions to quinidine should result in more cautious selection of fibrillators for regulation and more vigilant methods of exhibition of the drug, using an initial dose of 0.2 gm. of quinidine on the first day, increased by increments of 0.2 gm. daily to a maximum of 2 gm. in any single day. Artificial respiration is a useful measure that is occasionally lifesaving when apnea follows the administration of quinidine.

Nebraska State Medical Journal, Lincoln

38:353-384 (Oct.) 1953

Significance of Multiple Injuries in Relation to Surgery of Trauma. C. Mathewson Jr.—p. 356.
Surgical Treatment of Pancreatic Disorders. J. M. Waugh.—p. 361.
Liver in Heart Disease. H. J. Zimmerman.—p. 367.
Surgical Indications and Treatment of Mitral Stenosis. H. H. McCarthy. —p. 371.
Control of Secondary Hemorrhage Following Tonsillectomy. J. C. Davis. —p. 373.

New York State Journal of Medicine, New York

53:2015-2142 (Sept. 15) 1953

Bullous Dermatoses: Diagnoses, Classification, and Treatment. M. J. Costello.—p. 2075.
Antibiotic Drug Eruptions. J. T. Crissey and C. W. Caccamise.—p. 2085.
Industrial Dermatoses Associated with Neurodermatitis. A. Brodey. —p. 2089.
Hirsutism Due to Masculinovoblastoma. J. J. Hallett and J. W. Holler. —p. 2095.
Care of Plantar Wart. H. H. Bauckus.—p. 2098.
Resection of Left Auricular Appendage for Recurrent Arterial Embolization. R. A. Nabatoff, B. Richman and L. M. Rivkin.—p. 2103.
Biliary Tract Visualization with Telepaque: Results in 100 Patients. Z. T. Bercovitz, L. Gillette and S. White.—p. 2108.

Ohio State Medical Journal, Columbus

49:861-956 (Oct.) 1953

*Joint Stabilization Through Induced Ligament Sclerosis. G. S. Hackett. —p. 877.
Use of Buthoids® (Butaphyllamine® Suppositories) as Adjuncts in Treatment of Cardiovascular Disease. D. P. Osborn.—p. 885.
Progress in Study of Hodgkin's Disease. A. Rottino.—p. 868.
Present Day Lag in Treatment of Tuberculosis. R. H. Browning.—p. 891.
What to Do About Strasbismus. F. D. Costenbader.—p. 892.

Induced Sclerosis of Ligaments in Joint Stabilization.—Hackett believes that relaxation of the sacroiliac articulation, particularly of the posterior sacroiliac ligament, is an important factor in low-back pain. Functional relaxation of the posterior sacroiliac ligament occurs during pregnancy, whereas pathological relaxation results from strains, sprains, and tearing of fibers that may occur in two ways: (1) through a single, specific trauma incidental to the strain of an unaccustomed task, and (2) as the result of an occupation that requires a great deal of lifting, twisting strain in a stooped position, such as that of a housewife, farmer, an athlete, or an industrial worker. Case reports illustrate the different causes. The pain accompanying relaxation of the sacroiliac ligament may be continuous or recurrent and is susceptible to acute aggravation. It may be aching in character, or it may be severe and knife-like when movement is attempted. Many patients endure the pain for years, learning to live within its restrictions. The author describes his method of determining the seat of pain, point of tenderness, and the area of referred pain. He confirms the diagnosis by the injection of a local anesthetic into the ligament, which should abolish or relieve the pain. Roentgenograms are usually of no value in determining relaxation of the posterior sacroiliac ligament but are valuable in determining congenital or acquired deformities or bone lesions. As regards treatment, the author puts particular emphasis on the stabilization of the joint by sclerotherapy. The patient lies relaxed and face down. The site of injection may be beneath the posterior superior spine of the ilium or within 1.5 in. (3.81 cm.) above or below. A 24 gage needle 1.5 in. long or a 23 gage needle 2.5 in. (6.35 cm.) long (depending on the size of the patient) is attached to a syringe containing 3 to 5 cc. of a long-acting local anesthetic. It is inserted through the skin at a point 0.5 in. (1.27 cm.) lateral to the midline at an angle of 45 degrees. The anesthetic is slowly injected ahead of the needle until the needle has been inserted its full length. While the needle remains in place, the syringe is replaced by one containing 0.5 cc. of the sclerosing solution that is then injected into the ligament, not into the muscle or subcutaneous tissue, as the needle is withdrawn. The proliferation of fibrous tissue, which takes place in the connective tissue septums between the bundles and fibers of the ligament, will strengthen the ligament and inhibit the abnormal movement of the joint. The author has used this method for the past 14 years in 253 patients. Relief of symptoms ranging up to 14 years has been attained in 82% of the cases. No unfavorable incident occurred.

South Dakota J. Med. & Pharmacy, Sioux Falls

6:257-280 (Sept.) 1953

Contribution to Hepatitis Problem. R. W. Roesel.—p. 257.
Attempts at Isolating Influenza Virus in Two Southeastern South Dakota Cities During Recent Influenza Epidemic. E. C. Pirtle.—p. 261.

Southwestern Medicine, El Paso, Texas

34:305-344 (Sept.) 1953. **Partial Index**

Massive Gastro-Intestinal Hemorrhage. J. J. Gorman.—p. 327.
Bilateral Parovarian Cysts with Torsion of Pedicle of Right Parovarian Cyst: Report of Case. L. Manoil.—p. 330.

34:345-388 (Oct.) 1953

Comments on Treatment of Reptile Poisoning in the Southwest. F. A. Shannon.—p. 367.
Recurrent Implantation Cysts of Ovary. A. H. Follingstad.—p. 374.

34:389-432 (Nov.) 1953

Gout. R. D. Haines.—p. 409.
Bentyl Hydrochloride or Dicyclomine Effective in Relieving Angina Pectoris. R. J. Antos.—p. 413.
Bone Coccidioidomycosis: Case Report—Cured by Surgery. H. E. Hipps. —p. 416.

Texas State Journal of Medicine, Fort Worth

49:735-790 (Oct.) 1953

Glucose in Development and Treatment of Diabetic Acidosis. D. W. Seldin.—p. 738.
Diabetes in Children: Some Practical and Theoretical Considerations in Management. J. W. Sherrill.—p. 743.
Experiences with Vitallium Intramedullary Hip Prosthesis. F. R. Thompson.—p. 749.
Chronic or Periodic Headache. H. Ford and I. Schuleman.—p. 757.
Treatment of Urinary Infections: Choice of Drug. G. Carroll.—p. 761.
Lower Nephron Nephrosis: Emphasis on Conservative Treatment. S. B. Lindsey, R. D. Haines and V. J. Simmon.—p. 765.
Bilateral Renal Cortical Necrosis in Child Associated with an Incompatible Blood Transfusion. G. H. Wahle Jr. and E. E. Muirhead. —p. 770.

FOREIGN

Annals of Rheumatic Diseases, London

12:177-260 (Sept.) 1953

Natural History of Arthritis Following Venereal Urethritis. D. K. Ford. —p. 177.
Choice of Operation in Chronic Arthritis of Hip. W. D. Coltart.—p. 198.
Sources of Error in Erythrocyte Sedimentation Rate. J. S. Lawrence. —p. 206.
*Association of Sjögren's and Felty's Syndromes. K. J. Gurling.—p. 212.
Recovery from Structural Changes Produced in Adrenal Glands of Rat by Administration of Cortisone. M. B Patterson, H. S. Siegel and R. H. Freyberg.—p. 217.
*Dyspeptic Backache. J. W. Beattie.—p. 223.
Effect of Pregnancy on Onset and Course of Rheumatoid Arthritis. M. Oka.—p. 227.
Morbidity of Rheumatoid Arthritis. F. Ammitzbøl and E. Snorrason. —p. 230.

Association of Sjögren's and Felty's Syndromes.—Gurling presents observations on two patients in whom Sjögren's and Felty's syndromes were combined. Although attention has not previously been drawn to the association of these two syndromes, the author feels that the presence of certain features of both syndromes in these two patients suggests that they have a common pathological basis. They are unusual variants of rheumatoid arthritis, and, of the two, Felty's syndrome is less frequently encountered than Sjögren's, the incidence of which Stenstam in 1947 found to be 9.5% in 495 arthritic patients. Several cases of Sjögren's syndrome have been reported in which the white blood cell count is low, but only Ytrehus in 1946 mentioned the occurrence of keratoconjunctivitis sicca in Felty's syndrome. Examples of Sjögren's syndrome with splenomegaly or leukopenia have been reported by several observers. The author regards it as probable that both these syndromes are associated with a similar disturbance of collagen and reticuloendothelial tissues and that if the spleen is enlarged there is added the picture of hypersplenism mainly affecting the white blood cells. A small proportion of patients with Sjögren's syndrome may, therefore, have leukopenia if the spleen is enlarged, just as a few of those exhibiting Felty's syndrome may have keratoconjunctivitis and xerostomia.

Backache in Dyspepsia.—It is well known that backache occurs in spinal disorders involving the skeletal structures. It is also recognized as a feature of gynecologic disorders, organic nervous diseases, and states of anxiety and hysteria. Much less appreciated is the fact that backache may be caused by various intra-abdominal lesions. The first description of this association is attributed to Cruveilhier who in 1829 observed that "Many patients complain more of a spinal point than of an epigastric point of tenderness." Beattie shows that the association of backache with dyspepsia is often overlooked. He presents histories of four patients in whom backache was the predominant or an additional feature in the presence of gastrointestinal ulceration or neoplasm. A conversation with a fifth patient with duodenal ulcer dyspepsia elicited the information that during a bout of severe indigestion the pain in his back was considerably severer than his epigastric discomfort. Other cases have been seen in which backache occurred with epigastric discomfort and pain. This back pain was as troublesome as the indigestion, and sometimes worse. In some cases epigastric pain radiated through to the back. Strict attention to a peptic ulcer regimen produced alleviation of both symptoms. The importance of the symptom of backache in gastrointestinal diseases and the mechanism of production of this symptom are discussed.

British Journal of Dermatology, London

65:337-388 (Oct.) 1953. **Partial Index**

Studies on Case of Porphyria Cutanea Tarda. G. C. Wells and C. Rimington.—p. 337.
Cutaneous Manifestations of Porphyria: South African Cases. R. Lang and J. Walker.—p. 352.
Chronic Familial Porphyria, with Associated Changes in Long Bones. J. H. S. Pettit and F. G. Anderson.—p. 356.

British Journal of Radiology, London

26:497-552 (Oct.) 1953

Closure of Larynx. G. M. Ardran, F. H. Kemp and L. Manen.—p. 497.
Radiography of Larynx in Postero-Anterior Projection. G. M. Ardran and F. H. Kemp.—p. 509.
Pulmonary Interstitial Emphysema. G. Herrnheiser and J. P. Whitehead. —p. 519.
Cobalt 60 Telecurie Unit. M. Lederman and C. A. Greatorex.—p. 525.
Acrocephalosyndactyly with Report of Case. R. Cooper.—p. 533.
Preliminary Report on Sodium Acetrizoate as Contrast Medium in Intravenous Urography. P. Cave, G. A. Burfield and J. A. Rankin. —p. 548.
Experimental Radiotherapy of Abdominal Cancer: III. Increased Systemic Tolerance with Field-Fractionation (Sieves). L. Cohen and A. Cohen. —p. 551.

British Medical Journal, London

2:841-896 (Oct. 17) 1953

*Chronic Gastric Ulcer: Comparison Between Gastroscopically Controlled Series Treated Medically and Series Treated by Surgery. B. F. Swynnerton and N. C. Tanner.—p. 841.
Cancer and Community. P. Stocks.—p. 847.
Cancer and Community. R. W. Raven.—p. 850.
Modified Course of T. Congolense Infection in Mice Given Diets with Milk Casein. A. A. N. Keppie.—p. 853.
Histoplasmosis in Great Britain: Description of Second Case of Disseminated Histoplasmosis: Treatment by Ethyl Vanillate. S. Locket, E. A. Atkinson and W. S. M. Grieve.—p. 857.
Mechanism of Syncope After Coughing. E. P. Sharpey-Schafer.—p. 860.
Effects on Blood Pressure of Ventricular Asystole During Stokes-Adams Attacks and Acetylcholine Injections. E. D. Barlow and S. Howarth. —p. 863.
Hiatus Hernia and Pregnancy: Review of Nine Cases and Literature. W. A. W. Dutton and H. J. Bland.—p. 864.
*Treatment of Tetanus. J. H. McIntyre.—p. 866.

Chronic Gastric Ulcer.—Of 498 patients with chronic gastric ulcer admitted to the St. James's hospital in London between 1940 and 1946, 262 were treated medically and 254 surgically; 18 were in both groups. Of the 498 patients, 387 were men and 111 were women, a ratio of 3.5 to 1. Nearly all of the patients were followed up for from 5 to 12 years. The criterion for the inclusion of the patients in the authors' study was the presence of an active chronic gastric ulcer that must have been gastroscopically confirmed in the group receiving medical treatment. An analysis of the case records of the patients showed that the symptoms may start at any age, most commonly after 30, the average age being 44. The average age at the time of the operation in those surgically treated was in the fifties. The sites of gastric ulcers differed greatly between men and women. In women the site of predilection was the high posterior aspect of the lesser curvature, while ulcers in the pyloric antrum were exceptional. In men the distribution along the lesser curvature was more even, with a maximum incidence in the mid and lower body, while 10% were situated distal to the angulus. Results of a fractional test meal, using gruel as the stimulant, were available in 342 patients. The age of the patient influenced the level of acidity to only a slight extent; the presence of a degenerate mucosa rather than the age of the patient accounted for the findings. Sixty-one patients in the group receiving medical treatment and 56 in that receiving surgical treatment subsequently died. There was no predominant cause of death. Considering the problem of the malignant degeneration of chronic gastric ulcers, there was not enough evidence to apply the term "ulcer-cancers" to the condition in any of those patients in whom gastric carcinoma later developed. It is concluded that if an association between gastric ulcer and gastric carcinoma exists, it is due to a preference of both for the same type of degenerate mucosa. Hematemesis or melena occurred in 139 (28%) of the 498 patients during the course of their ulcer histories; in 22 (16%) of the 139 there was more than one episode of bleeding. Results obtained by medical treatment suggested that, although treatment will nearly always heal the ulcer, it will keep it healed in only 25% of the milder or earlier cases. In 75% of the patients the symptoms of gastric ulcers recurred. Patients less than 50 years of age had a higher incidence of recurrences than those aged over 60, no matter what the length of history. This may be because those patients whose ulcers recur frequently are operated on before reaching an advanced age. In the group treated surgically, very satis-

factory results were obtained in 80%, moderate in 10%, and poor in the remaining 10%. It is concluded that surgical intervention at present offers the best results, but before it is advocated certain factors, including local operative mortality figures, the severity and length of history of symptoms, and the presence of intercurrent disease, should be taken into account.

Treatment of Tetanus.—A 4-year-old girl and a 7-year-old boy with severe tetanus in whom the periods between injury and onset of symptoms were four and six days, i. e., less than one week, died despite treatment with gallamine triethiodide, thiopental sodium, antitoxin, and antibiotics. Death occurred within three days in the girl and within 24 hours in the boy. Gallamine triethiodide was given in doses varying from 5 mg. intravenously to 20 mg. intramuscularly. The girl received a total dose of 180 mg. intramuscularly and 170 mg. intravenously, and the boy received 404 mg. intravenously. The author had the impression that gallamine triethiodide caused some respiratory embarrassment in the girl, but this was not confirmed in the boy, who was, however, desperately ill on admission. Penicillin, even in doses of 1,000,000 units given every four hours, and antitoxin serum in doses of 80,000 units in the first 12 hours had little effect. The present methods of treatment of tetanus in cases occurring within a week of injury are ineffective. Routine active immunization of all children against tetanus is recommended.

Canadian Journal of Medical Sciences, Ottawa

31:367-436 (Oct.) 1953. **Partial Index**

Slide Culture of Tubercle Bacilli: I. Media and Methods. R. W. Reed. —p. 367.
Rat Serum Amylase: I. Studies in Normal and Alloxan Diabetic Animal. J. Tuba and G. S. Wiberg.—p. 377.
Method for Determination of Effects of Drugs on Pain Threshold of Human Subjects. G. A. Deneau, R. A. Waud and C. W. Gowdey. —p. 387.
Statistical Methods in Medical Research: II. Sample Sizes Required in Experiments Involving All-or-None Responses. D. Mainland and M. I. Sutcliffe.—p. 406.
*Prevention of Liver Necrosis by Alpha-Tocopherol, Methionine, and Cysteine by Oral and Parenteral Routes. J. R. McLean and J. M. R. Beveridge.—p. 417.
Incidence of E. Coli Group 0111 in Sporadic Infantile Gastroenteritis and Sensitivity to Antibiotics of Strains Isolated. N. A. Hinton, J. E. Nelles and G. B. Reed.—p. 431.

Prevention of Liver Necrosis.—According to McLean and Beveridge a number of investigators have substantiated the fact that when young rats are fed certain diets low in the sulfur-containing amino acids, methionine and cystine, and in alpha-tocopherol, they succumb within a few weeks to acute hepatic damage. After reviewing the literature on this problem, the authors point out that the wide dissimilarity in molecular structure of alpha-tocopherol and the sulfur-containing amino acids, methionine and cystine, and the fact that these compounds exert a similar prophylactic action in the prevention of acute liver necrosis has led to much speculation on the relationship between them and on their mode of action. It is possible that these compounds are required at different points in a metabolic process. The possibility also exists that one of these substances might act exclusively in the intestinal tract and another in some part of the body after absorption. The feasibility of testing this thesis by the administration of these compounds by mouth and by injection seemed reasonable. Furthermore, such an experiment might throw light on the intestinal toxin theory. Seventy male rats of the Sprague-Dawley strain were divided into groups of 10. These groups were fed a basal necrogenic diet supplemented with alpha-tocopherol, DL-methionine, and L-cysteine. The amount of supplement contained in the daily ration was administered parenterally to similar groups of rats. All three antinecrogenic agents employed exerted some action when given either in the diet or by injection. Alpha-tocopherol given by both routes completely prevented the development of liver necrosis. On an equisulfur basis, methionine was obviously more effective than cysteine by either method of administration. The experiment did not answer the question of the site of action of these compounds. The low antinecrogenic potency of cysteine compared to methionine or to cystine poses a problem yet to be explained.

Die Medizinische, Stuttgart

No. 42:1349-1380 (Oct. 17) 1953. **Partial Index**

Tumors of the Bladder and Their Treatment. H. Schneider.—p. 1349.
*Therapeutic Sleep with Phenothiazine Derivatives (Atosil and Megaphen). M. Ratschow.—p. 1351.
Clinical Importance of Differentiated Determination of Prothrombin and Accelerators of Blood Coagulation. H. E. Schultze and G. Schwick. —p. 1354.
Subclinical Types of Thiamine (Vitamin B_1) Deficiency. P. J. Bandmann. —p. 1357.

Therapeutic Sleep with Phenothiazine Derivatives.—A proprietary preparation of N-dimethylaminopropyl phenothiazine (Phenergan) called Atosil, and Megaphen another proprietary phenothiazine derivative of even greater potency were used in combination for inducing continued therapeutic sleep (so-called artificial hibernation) for 72 hours in adult patients with cardiac infarction, pain associated with acute arterial thrombosis, pain associated with gastroduodenal ulcers, circulatory decompensation, and toxic diffuse goiter and in children undergoing tonsillectomy. Both drugs were available in ampuls of 2 cubic centimeters containing 50 mg. of the hydrochloride acid salt, and in 25 mg. tablets. Sleep was first induced with intravenous administration of 2 ampuls of either one of the two preparations diluted with sodium chloride or polyvinylpyrrolidone (Periston). Phenergan in doses of 50 mg. then was given intramuscularly every eight hours, and in addition 25 mg. of Megaphen were given for the night. In very restless patients, this basic dose had to be increased to 400 or 500 mg. Oral therapy in general was not sufficient to induce therapeutic sleep, but was used as a somewhat stronger sedative during the day; one tablet of Phenergan was given three times during the day and two tablets of Megaphen for the night. Children were given one-half or one-third of the adult doses. Independent of the patient's disease, observations were made as follows: The hypnotic effect of the drugs became manifest between 10 and 20 minutes after the parenteral administration and between 30 and 45 minutes after the oral administration. There was a slight increase in pulse rate, which was restored to normal after about 90 minutes, and a slight lowering of the systolic blood pressure. Respiration was deep and regular. Diuresis was increased, and patients with circulatory disturbances excreted occasionally four to five liters within 24 hours. Defecation did not occur spontaneously and enemas were required daily to evacuate large amounts of stool. The basal metabolic rate was reduced by 20% during the therapeutic sleep. The hypnotic effect of the drugs was most pronounced during the first 24 hours, and in order to maintain it at the same level an increase of the single doses of the drugs by 25 mg. seems advisable on the second and third day. The patients could be awakened easily at any time, but were not given food. The therapeutic sleep thus was combined with a fasting cure, but the intake of 1,000 cc. of fluid, preferably fruit juice, seemed appropriate. The skin temperature, particularly that of the feet, was reduced by 4 to 5 degrees, and there was a considerable drop in body temperature to 35 C (95 F) and even less. Defensive reactions to cold, such as slight chills or cutis anserina, occurred rarely but were considered as warning signs to discontinue the sleep. Most of the 25 patients with cardiac infarction were free of complaints after three days of therapeutic sleep. In patients with pain from acute arterial thrombosis, therapeutic sleep made possible intra-arterial insufflation of oxygen, intra-arterial injections of procaine hydrochloride and of 2-benzyl-2-imidazoline hydrochloride (Priscol) without restlessness of the patient. Perfusion thus could be restored and extremities could be saved, even in cases with an unfavorable prognosis. Treatment by diet and bed rest of patients with painful duodenal ulcers was definitely shortened after 72 hours of therapeutic sleep. Considerable relief was obtained by early diuresis and evacuation of particularly large amounts of feces resulting from three days therapeutic sleep in 15 patients with cardiac decompensation. Severe phenomena of excitation and threatened coma were controlled by three to four days therapeutic sleep in five patients with diffuse toxic goiter. Local anesthesia could be reduced to a minimum and administration of analgesics was not required in children in whom tonsillectomies were performed during therapeutic sleep induced with Phenergan. Undesirable side-effects were hardly observed

except for a feeling of restlessness in the legs, due to peripheral hypoxemia, and excitation in alcoholic patients and in patients with cerebral sclerosis; these untoward reactions subsided within 50 to 60 minutes and successive sleep was particularly deep.

Edinburgh Medical Journal

60:409-436 (Oct.) 1953

Some Observations on Congenital Infantile Hypertrophic Pyloric Stenosis. D. N. Nicholson.—p. 409.
Gilles de la Tourette's Syndrome. W. P. Mazur.—p. 427.

Geburtshilfe und Frauenheilkunde, Stuttgart

13:765-860 (Sept.) 1953. **Partial Index**

Importance of Cation Exchange Resins in Obstetrics. H. P. Wolff. —p. 765.
Cesarian Section: Indications as Regard the Infant. H. Noack.—p. 778.
Placenta Praevia and Cesarian Section. H. Hosemann and E. Halfpap. —p. 786.
Cancer Prophylaxis: Experiences and Results of a Cancer Prevention Clinic from 1948 to 1952. Suggestions for Removal of Organizational Defects. H. Bowien.—p. 796.
Demonstration of Liver Antibodies in Pregnancy Toxicosis. H. E. Levens and O. Prokop.—p. 828.
*Treatment of Hyperemesis Gravidarum. G. Hartlieb.—p. 836.
Radiocobalt in Treatment of Climacteric Hemorrhages. J. Gosch.—p. 841.

Treatment of Hyperemesis Gravidarum.—According to Hartlieb hyperemesis gravidarum is the result of accumulations of abnormal metabolic products in the blood of pregnant women. He believes that the assumption that psychic factors are mostly responsible for this disorder has been largely disproved. In fatal cases of hyperemesis gravidarum, the main changes are found in the liver, which presents the picture of toxic degeneration. In the acini, particularly in the cells near the center, fatty degeneration is found, and in many cases the liver changes resemble those of atrophy of the liver. The "antitoxic principle" in liver extract, which since 1939 has been known as vitamin B_6 or pyridoxine, seemed to Hartlieb a logical therapeutic factor for hyperemesis gravidarum, the more so since this substance had been used with good results by American investigators in the treatment of hyperemesis. He describes his experience in 18 pregnant women who were referred to the hospital because of uncontrollable vomiting. The histories of two women with a very severe form of hyperemesis are presented. These two, like all the other women, responded favorably to the vitamin B_6. Patients with sodium chloride deficiency were given in addition injections or drip infusions of sodium chloride solution, and those who had acetonuria were given dextrose solution. Although eight of the women responded to the vitamin B_6 treatment within the first three days, the others required a more prolonged treatment. The author warns against discouragement if effects are somewhat delayed.

Lancet, London

2:789-842 (Oct. 17) 1953

Change and Permanence in Education for Medicine. H. Himsworth. —p. 789.
*Ion-Exchange Resins in Treatment of Anuria. B. M. Evans, N. C. H. Jones, M. D. Milne and H. Yellowlees.—p. 791.
Epidemic Bronchitis in Children. D. H. Garrow and J. W. Fawcett. —p. 795.
Sudden or Unexpected Natural Death Due to Ruptured Intracranial Aneurysm: Survey of 250 Forensic Cases. T. A. R. Dinning and M. A. Falconer.—p. 799.
Alkalosis in Infants: Treatment by Intravenous Infusion of Ammonium Chloride. S. A. Doxiadis, M. K. Goldfinch and K. S. Holt.—p. 801.
Hexamethonium in Polyvinylpyrrolidone. E. A. Murphy and J. Eastwood. —p. 804.
New Method for Differentiation of Sickle-Cell Anaemia from Sickle-Cell Trait. J. M. Vandepitte and L. A. Louis.—p. 806.
Perforated Duodenal Ulcer in Children. D. M. Bell.—p. 810.
Traumatic Haemothorax. R. Batten.—p. 811.

Ion-Exchange Resins in Anuria.—Evans and associates describe their experience with a sodium sulfonic resin in the treatment of five cases of anuria or severe oliguria complicated by hyperkalemia, together with relevant observations of the effect of the resin in a normal person on a low electrolyte diet. All the patients with anuria were from other hospitals and so the resin treatment was not begun as early as recommended in this report. The binding capacity of the resin was 3.4 mEq. cation per gram of resin. About 90% of this was sodium, but 3% calcium and 7% ammonium ion was also present. Since the resin was completely free from potassium, the small proportion of cation other than sodium was of little, if any, importance. The resin was administered both by mouth and by retention enema, the dosage being 15 gm. three or four times daily by mouth and 30 gm. daily by enema. The serum-potassium level was satisfactorily reduced in four of the patients, with final recovery in two. Two patients died from severe irreversible renal damage and one from hyperkalemia before the resin could exert any significant effect. The resin is more effective in removing potassium when given by mouth than when given by retention enema. The resin continues to take up potassium in exchange for sodium throughout its passage through the gastrointestinal tract. The effect is, therefore, delayed after the first dose and prolonged after the last one. A scheme of routine treatment with ion-exchange resins is given for anuria and severe oliguria.

Medical Journal of Australia, Sydney

2:401-440 (Sept. 12) 1953

Disseminated Lupus Erythematosus. R. B. Perkins.—p. 401.
Systemic Lupus Erythematosus. H. Taylor.—p. 403.
Detection of Rhesus Antigen and Antibodies: Simple and Rapid Method. H. Ward.—p. 405.
Neurosis in General Practice. H. O. Chapman.—p. 407.
Preparation and Stability of Field's Stain. E. R. Cole and A. K. Sewell. —p. 415.
Mortality from Tetanus in Australia. H. O. Lancaster.—p. 417.

2:441-480 (Sept. 19) 1953

Diagnosis and Treatment of Epidemic Diarrhoea. A. Garven.—p. 447.
Diarrhoea and Vomiting in Children. D. G. Hamilton.—p. 450.
The Subarachnoid Space: Some Experimental Approaches to its Pathology. W. J. Simmonds.—p. 452.
*Incidence of Congenital Malformations Following Maternal Rubella at Various Stages of Pregnancy. I. S. Collins.—p. 456.

Rubella in Pregnancy.—A review of the investigations conducted in recent years by various authors shows general agreement on the lessening of risk of congenital malformation in infants whose mothers contracted rubella after the fourth month of pregnancy. The risk is very great after infection in the first four months, the proportion of affected children being 70 to 80%. Information is limited because of the small number of cases of rubella occurring during late pregnancy. Clinical impressions suggest that convalescent serum and gamma globulin are helpful in prophylaxis, but this has not been proved.

Minerva Medica, Turin

44:651-678 (Sept. 19) 1953

Behavior of Some Plasma Components in Patients with Tuberculosis During Streptomycin Therapy: I. Protein Picture. V. Caramello, A. M. Pelocchino and G. Pescetti.—p. 651.
Id.: II. Lipid Picture. A. M. Pelocchino, G. Pescetti and V. Caramello. —p. 655.
Id.: III. Plasma Lipase. G. Pescetti, V. Caramello and A. M. Pelocchino. —p. 658.
Hematochemical Studies on Mediterranean Blood Disorder: Alkali-Fast Hemoglobin. S. Agnisetta and S. Massenti.—p. 661.
*Congenital Cyanosis Due to Methemoglobinemia. A. De Gasperis, R. Donatelli and F. Rovelli.—p. 664.

Congenital Cyanosis Due to Methemoglobinemia.—Congenital cyanosis due to methemoglobinemia is rare, only 100 cases having been reported. Methemoglobin is a pigment in which the iron is in a ferric state and not in a ferrous combination as in hemoglobin and oxyhemoglobin. It is a stable product unable to transport oxygen and is normally present in the blood in small amounts—about 1 to 2% of the total hemoglobin content. The balance between hemoglobin and methemoglobin is maintained by a complex enzyme system. When this balance is altered either by a dysfunction of the intraglobular systems that reduce the methemoglobin or by the presence of oxidants that produce methemoglobin more rapidly than the cell mechanism is able to reduce it, great amounts of methemoglobin concentrate in the blood and cyanosis results. A methemoglobin concentration of 1.5 gm. per 100 cc. of blood produces visible

cyanosis. This is especially marked on the lips, fingers, ears, tongue, nose, and mucous membranes of the mouth. Clubbing of the fingers is never present in these patients nor is the porphyrin metabolism or the renal function impaired. The plasma level of ascorbic acid is below normal. Large amounts of vitamin C have been used with favorable results in treatment of congenital cyanosis due to methemoglobinemia. The most effective drug is methylene blue given either parenterally or orally. Since the condition is generally congenital, the results are transitory. The authors cite the cases of three women (32, 26, and 28 years of age) in whom cyanosis, present since birth, was ascribed to a congenital heart defect. Clinical, radiologic, and electrocardiographic examinations did not reveal a cardiovascular anomaly and there was no clubbing of the fingers. The diagnosis was established after determination of the methemoglobin by gasometric means in one patient and in the other two after tubes containing their blood samples failed to become bright red when shaken. One patient refused therapy. The second improved with vitamin C, cytochrome C, and methylene blue therapy. The third patient who was pregnant and whose methemoglobin concentration was 10.8 gm. per 100 cc. of blood was given vitamin C and cytochrome C. She continued the pregnancy to term, but cyanosis became aggravated during the puerperium. It was controlled with methylene blue. Conclusions on the therapeutic activity of the cytochrome C in this condition cannot be drawn from the authors' limited experience. These are the first cases of congenital cyanosis due to methemoglobinemia reported in the Italian literature.

Nordisk Medicin, Stockholm

50:1251-1284 (Sept. 10) 1953. **Partial Index**

Peripheral Arterial Insufficiency. O. Selvaag.—p. 1251.
*Paroxysmal Auricular Fibrillation of Functional Type. E. Engelfeldt. —p. 1257.
Plasma Concentration of Quinidine in Reversion of Auricular Fibrillation. G. Wallgren.—p. 1260.
Anticoagulation Treatment in Cerebral Apoplexy: Differential Diagnosis of Cerebral Hemorrhage and Encephalomalacia. H. Stürup and T. Fog. —p. 1261.
Prognosis in Subarachnoid Hemorrhage. E. Frantzen.—p. 1268.
Glaucoma After Contusion of Eye. A. Oksala.—p. 1274.

Paroxysmal Auricular Fibrillation of Functional Type.—Engelfeldt discusses paroxysmal functional auricular fibrillation on the basis of nine cases treated in the Garnisonssjukhus in the period 1950-1951. Organic heart disease and thyrotoxicosis must be excluded. Sometimes the rhythm becomes regular in the course of a few minutes, in other cases the fibrillation becomes permanent if treatment is not instituted. Among the precipitating factors are emotion, effort, infection, and intoxication. The symptoms vary. Palpitation of the heart is common. With increasing disturbance there are fatigue, general indisposition, and sudden vertigo. Cardiac decompensation and angina pectoris call for special attention. Cardiac decompensation depends on the heart rate. Angina pectoris is not a frequent symptom but may occur, sometimes in intensive form. Every newly discovered case of paroxysmal auricular fibrillation requires thorough examination in a hospital. If it becomes clear that the fibrillation is purely functional, the condition must be explained to the patient as soon as possible. The symptoms often abate spontaneously. They may be severe and incapacitating. If they continue for several hours, treatment is indicated. Quinidine is the drug of choice. Digitalis should mainly be used to decrease the heart rate in alarming tachycardia. The prognosis is good.

Schweizerische medizinische Wochenschrift, Basel

83:971-998 (Oct. 10) 1953. **Partial Index**

*Chronic Adrenal Insufficiencies. J. Warter and J. Schwartz.—p. 971.
Remarks on Phonocardiography and on More Intimate Cardiac Rhythms: II. Communication. H. Scholer and M. Springenschmid.—p. 975.
Clinical Importance of Infundibular Thorax. T. Wegmann and F. Schaub. —p. 986.

Chronic Adrenal Insufficiencies.—According to Warter and Schwartz of the University of Strasbourg, steroid balance is a satisfactory biological test that offers considerable aid in the diagnosis of Addison's disease. Excretion of 17-ketosteroids and corticoids in the urine was much reduced in four men between the ages of 22 and 60 and in two women aged 61 and 41 with Addison's disease. Determination of 17-ketosteroids and corticoids in the urine was repeated in five of these patients after they had been given 30 units of corticotropin (ACTH) by intravenous infusion in the course of three hours. Excretion of steroids was modified only slightly, the ratio of 17-ketosteroids being increased from none to 1.2 mg. and that of corticoids from none to 0.10 mg., while in normal persons the excretion of 17-ketosteroids and corticoids in the urine was increased from 3 to 15 mg. and from 0.40 to 1 mg., respectively. The excretion of 17-ketosteroids and corticoids in the urine was determined in six additional patients, all women between the ages of 34 and 47. Pronounced asthenia and loss of weight were observed in all of these patients. Abnormal pigmentation was present in only three. There was no increased fatigability; the blood electrolytes were not altered; and the basal metabolic rate was definitely lowered in one patient, but was normal in the others. The extremely weak excretion of 17-ketosteroids in the urine and the subnormal excretion of corticoids established the diagnosis of mild types (formes frustes) of hypophysial insufficiencies with essentially adrenal manifestations. Repeated determinations of steroid excretion after intravenous infusion of 30 units of corticotropin for three hours revealed a definite response of the urinary 17-ketosteroids and normal increase of the corticoids. Repeated explorations may be required for the differential diagnosis of primary adrenal insufficiency and that secondary to hypophysial insufficiency. There is a certain parallel between the adrenal, abortive types of Simmond's disease and hypophysial myxedema. Secondary adrenal insufficiency is benefited by treatment with corticotropin combined with small doses of cortisone. Determination of urinary steroids in a woman with dyspnea on effort and with a pronounced senile appearance showed a ratio of 0.82 mg. of 17-ketosteroids and of 0.40 mg. of corticosteroids. Death occurred suddenly and necropsy revealed an adenoma of the left adrenal with atrophy of the remaining parenchyma. In exceptional cases, the steroid balance may contradict the clinical picture; these are cases of discordant impairment of the adrenals with mixed signs of hyperfunction and hypofunction.

Strahlentherapie, Munich

92:1-164 (No. 1) 1953. **Partial Index**

Adenosine Triphosphoric Acid in Blood and of Elimination of 17-Ketosteroids in Urine in Course of Deep Roentgen Irradiation. H. J. Maurer and K. H. Pfeffer.—p. 19.
Importance of Ultrafractionation for Biological Effect of Electronic Irradiation. K. Müller and H. Hase.—p. 33.
Therapy of Cancer of Cervix Uteri. J. Ries and H. Schlögl.—p. 61.
Prognosis of Cervical Carcinoma on Basis of Histological Picture. E. Mayr.—p. 67.
Statistical and Experimental Investigation of Parametrial Dissemination of Cervical Carcinoma. F. Feldmann and M. Maué.—p. 80.
Relations Between Histological Structure and Cure of Cervical Carcinoma. P. Stüper.—p. 89.
*Carcinoma of Female Genitalia and Sexual Continence. G. Schömig. —p. 156.

Carcinoma of Female Genitalia and Sexual Continence.—Schömig says that most authors assume that certain factors involved in sexual activity, such as trauma incident to delivery, increase the incidence of carcinoma of the female genitalia. This implies that the incidence should be lower in the absence of such factors. Studies of the medical records of several convents provided data on 1,025 nuns who had died during the first half of this century. The statistics on the life expectancy of the general population during this period served as a basis for comparison. Deaths from carcinoma were of about the same frequency in both groups, but a breakdown of the over-all carcinoma mortality according to localization revealed differences. For instance deaths from carcinoma of the stomach accounted for 39.1% of all carcinomas among nuns, whereas among the general population the percentage of deaths from gastric carcinoma was 25.5%. Deaths from carcinoma of the genitalia was only slightly lower among nuns than among the general population, but the exact localization of the genital cancer was indicated in only 7 of 26 nuns. Among these 7 there was one carcinoma of the uterine cervix, four carcinomas of the corpus uteri, and two of the

ovaries. In order to obtain more information about the distribution of genital carcinomas in nuns, Schömig examined the case records of nuns treated for genital carcinoma at the Women's Clinic in Würzburg during the last 30 years. Of 17 nuns 11 had carcinoma of the corpus uteri, 5 had ovarian carcinoma, and 1 had a uterine sarcoma. There was not a single case of carcinoma of the uterine cervix, whereas on the basis of other statistics 10 to 14 cases of cervical carcinoma could have been expected. The author cites a report by Gagnon in 1950, who also commented on the absence of carcinoma of the uterine cervix in nuns, whereas in other women this form of carcinoma accounts for the large majority of genital cancers.

92:165-324 (No. 2) 1953. **Partial Index**

Concurrence and Differential Diagnosis of Carcinoma and Sarcoma on Lupus Vulgaris. K. W. Kalkoff and E. Macher.—p. 181.
Influence of Irradiation on Life Expectancy of Patients with Mycosis Fungoides. E. Böhmer and H. J. Heite.—p. 203.
Relations Between Histological Structure and Cure of Carcinomas of Cervix Uteri: II. Investigations on Degrees of Maturity and Similar Classifications. P. Stüper.—p. 219.
Radium Treatment of Carcinoma of Lip. N. Nicolov.—p. 251.
*Treatment of Sarcoma of Tonsils. H. Trübestein.—p. 281.
Spontaneous Fractures of Pelvis and Neck of Femur Following Irradiation: Three Cases, Spontaneous Cure in Two Cases. R. Birkner.—p. 297.

Treatment of Sarcoma of Tonsils.—At the Roentgen Institute of the University of Frankfurt, a total of 52 sarcomas of the tonsils (32 in males and 20 in females) were subjected to roentgen therapy in the course of the last 22 years. In some of these patients, irradiation was employed after surgical treatment, whereas in others irradiation was the only treatment. Tonsillar sarcoma is most frequent during the sixth decade of life, irrespective of the sex of the patient, although it may occur also in children. Histological records that were available for 39 of the patients showed that round cell sarcoma was present in 17, lymphosarcoma in 15, retothelial sarcoma in 5, myxosarcoma in 1, and spindle cell sarcoma in 1. Symptoms persisted for an average of three months; there was no noticeable difference in duration of symptoms whether the patient was free from lymph node metastases or had such metastases on one or both sides. Only patients with generalized metastases had a longer history. Clinically, tonsillar sarcoma usually takes the form of an ulcerated tumor, except that in lymphosarcoma the surface of the tumor may be smooth. An ulcerated tumor on one side may be mistaken for Plaut-Vincent's angina and a smooth tumor for a peritonsillar abscess. Lymph node metastases were present in 59% of the cases at the time treatment was begun. The techniques used included one customary at the Frankfurt Roentgen Institute, later simple fractionation and finally a modified protracted fractionated irradiation. Five fields were usually irradiated: two tonsillar, two submental, and one ipsilateral buccal field. Irradiation proved permanently effective only in patients free of lymph node metastases or in those in whom they were restricted to one side, and even in these cases only if an adequate total dose has been applied. In patients with generalized metastases, life may still be prolonged by applying adequately large doses to the lymph node metastases. It is important to irradiate both sides, even the apparently uninvolved side. If surgical treatment is employed first, then postoperative treatment should employ the same high doses as would be used if no operation had been done.

Tidsskrift for Den Norske Laegeforening, Oslo

73:657-692 (Sept. 1) 1953. **Partial Index**

Cushing's Syndrome and Accompanying Psychic Disturbances: Case with Periods of Marked Confusion. C. L. Laane.—p. 665.
Achillobursitis. O. Knutrud.—p. 669.
*Cerebral Complications in Acute Gastroenteritis in Infants. E. Grønvik and P. Skjelbred.—p. 670.
Congenital Malformations and Teratomas. U. Rolfsen.—p. 673.

Cerebral Complications in Acute Gastroenteritis in Infants.—Grønvik and Skjelbred present three cases of grave cerebral complications after acute gastroenteritis in infants treated in the Bergen Children's Clinic. In one case there was hemiparesis; in one, hydrocephalus; and in the third, subdural hematoma. The cases point to dehydration and circulatory defect as the cause of the cerebral injury. The cerebral changes in gastroenteritis with intoxication can depend on two unlike mechanism, each of which can bring about several kinds of pathological changes in the brain and thus different neurological sequels. In the first place, dehydration can lead to a physical change in the blood with hemoconcentration, increased viscosity, and slowed blood stream, which will predispose to thrombus formation either in a vein or in one of the large venous sinuses in dura and may cause different symptoms, depending on the size and location of the thrombus. In the second place, the prolonged circulation time leads to anoxemia, which can cause injury of nervous tissue and damage to blood vessel walls and so predispose to hemorrhage. The importance of quickly and effectively overcoming dehydration is stressed in acute gastroenteritis in infants by parenteral administration of fluids and adequate administration of electrolytes.

Transactions Royal Soc. Trop. Med. and Hyg., London

47:351-440 (Sept.) 1953. **Partial Index**

*Neuroparalytic Accidents of Antirabies Vaccination. A. J. S. McFadzean and G. H. Choa.—p. 372.
Note on Sleeping Sickness Control in Northwest Ashanti (Gold Coast). D. Scott.—p. 405.
Eosinophilic Syndrome: Epidemiological Study. W. J. Aitken and K. P. Roy.—p. 418.
Intensive Treatment of Schistosomiasis with Sodium Antimony Tartrate: Report on 200 Cases. S. M. Talaat.—p. 425.

Neuroparalytic Accidents in Antirabies Vaccination.—McFadzean and Choa review the incidence of neuroparalytic accidents of rabies vaccination. In Hong Kong in the years 1949 to 1952, 14,119 patients were given the Semple vaccine and 17 cases of neuroparalytic accidents occurred, an incidence of 1:831. Two different types of pathological lesions have been mentioned in the literature. An acute perivascular myelinoclasis is found most frequently. The second type of lesion is a polyradiculoneuronitis indistinguishable from that encountered in fatal cases of the Guillain-Barré syndrome. Evidence suggests that perivascular myelinoclasis is the expression of a sensitization reaction to the nerve substance contained in the vaccine. The response of this type of lesion to corticotropin and cortisone strengthens this conception. The pathogenesis of polyradiculoneuronitis is unknown, but it is presumed to be similar to that of the Guillain-Barré syndrome. The authors describe clinical and laboratory findings in 14 cases of neuroparalytic accidents. Nine were group 1 lesions (four transverse myelitis, one an ascending myelitis, three encephalomyelitis, one encephalitis without paralysis) and five were group 2 lesions with polyneuritis of varying severity. Group 1 lesions showed a polymorphonuclear leukocytosis that was not found in group 2. The cerebrospinal fluid in group 1 cases showed a variable increase in cells and in protein, while that in group 2 showed albuminocytological dissociation with a total increase in protein similar to that encountered in the Guillain-Barré syndrome. Constitutional symptoms occurring during the course of antirabies vaccination should be regarded as prodromal symptoms of group 1 or as the invasive phase of group 2 lesions. Three cases of group 1 and one case of group 2 lesions were treated with diphenhydramine given intravenously without appreciable effect on the central nervous system lesion. Three cases of group 1 were treated with corticotropin and responded satisfactorily. One group 2 lesion was similarly treated with doubtful effect.

Tórax, Montevideo

2:109-206 (June) 1953. **Partial Index**

*Chemical Casectomy with Isoniazid (Rimifon) with Appearance of Mechanical Defects (Pneumatic Changes). P. Purriel, E. Casamayou, O. Muras and others.—p. 115.
Extrapleural Pneumothorax: Observations on 29 Cases. J. P. Ibarra, J. Dubourdieu, M. Antes and R. Vignale.—p. 145.
Late Therapeutic Results (6 Months) in 45 Patients with Chronic Pulmonary Tuberculosis Treated for a Semester with Isoniazid. P. Purriel, O. Muras, C. La Torre and others.—p. 182.

Chemical "Casectomy" from Isoniazid (Isonicotinic Acid Hydrazide).—The authors observed roentgenologic changes in pulmonary cavities of seven young adult patients with advanced bilateral ulcerocaseous pulmonary tuberculosis who were given

isoniazid for six months. Positive sputum was present in all of these. In the course of the treatment progressive marked improvement in the general condition and in symptoms with conversion of the sputum paralleled roentgenologic changes of the lung. The latter consisted of disappearance of the pneumonic and bronchopneumonic lesions and the development of large cavities in the parenchyma of the previously involved areas. The cavities rapidly increased in size, assuming a spherical shape and losing the thick walls, the shadow of which was seen as an extremely fine line. At the end of the treatment clinical cure was complete and the sputum was converted. The cavities remained open. Six months after discontinuation of the treatment, the good clinical and bacteriological results persisted. The cavities remained open. Intracavitary hyperpressure was observed by manometry in some but not all cavities. A pneumonectomy was performed on two patients. It was observed in the resected lung that the effect of the drug is due to its diffusion into the caseous material, the cavitary wall, and the parenchymal area of the tuberculous lesion with elimination of the pathological material through the bronchi. The process is one of a chemical "casectomy," which leaves a mechanical defect, after having produced an anatomic cure of the lesion. The mechanical and dynamic conditions of the lung after cure permit the cavities to remain open, unmovable, and free from any danger of infection, provided they communicate with normal bronchi or with bronchi that become normal in the course of the treatment.

Tubercle, London

34:259-286 (Oct.) 1953

Functional Prophylaxis in Collapse Therapy. G. Birath.—p. 260.
Bronchography in Pulmonary Tuberculosis: Report of Year's Experience with "Dionosil." J. K. McKechnie.—p. 271.
Nydrazid-Isoniazid in Treatment of Tuberculous Mental Defectives. M. Engler.—p. 275.
Familial Erythema Nodosum. J. T. Harold.—p. 279.

Ztschr. f. d. ges. innere Medizin, Leipzig

8:717-764 (Aug. 15) 1953. **Partial Index**

Is Gastroscopy Suited to Promote Early Diagnosis of Carcinoma of Stomach? K.-H. Straube.—p. 718.
*Pathogenesis and Treatment of Tuberculosis of Cervical Nodes in Adults. F. and M. Trautmann.—p. 725.
Study on Absorption of Protein and Fat After Total Gastrectomy. M. Steingräber and H. Burmeister.—p. 737.
Methods of Paper Electrophoresis. A. Knapp and H. Sieler.—p. 741.

Tuberculosis of Cervical Lymph Nodes in Adults.—In most of the 54 men and 132 women with tuberculosis of lymph nodes reported on by Trautmann, the disease was localized in the neck; it was generalized in 16; 25 patients had enlarged axillary lymph nodes in addition to cervical or hilar lymph nodes. Of the 186 patients, 178 were submitted to roentgen examination of the chest, and calcified foci were observed in the lungs of 155. Tuberculosis of the cervical lymph nodes apparently results from hematogenous dissemination in most of the adult patients. Only 46 (24.7%) of the 186 patients had recurrences of tuberculosis of the cervical lymph nodes developed during childhood, but 42 of these also had pulmonary foci. About 10% of the patients had supraclavicular lymphomas that probably were of ascending lymphogenous origin from the thoracic cavity. These data strongly suggest that general treatment has the first place in the management of tuberculous lymphadenitis of adults. The author agrees with the Swiss workers Kaiser, Jacob, and Wissler that tonsillectomy does not exert any notable effect on the course of the tuberculous lymphadenitis. There is no definite proof that the risk of recurrence is reduced by early radical removal of the involved lymph nodes, but the duration of the lymphadenitis may be shortened by the surgical intervention. Improvement of the general condition, however, must precede such an operation in the course of which serious complications, such as permanent paralysis of the accessory nerve and temporary paresis of the hypoglossal nerve and of the ramus of the jaw, are not always avoided, even by the experienced surgeon. Roentgen irradiation does not decisively change the course of the tuberculosis of the lymph nodes. Because of the associated risk of exacerbation and miliary dissemination, roentgen irradiation is contraindicated in patients in poor general condition. Since August, 1952, 33 patients with tuberculosis of the cervical lymph nodes were treated with isoniazid alone in doses of 5 mg. per kilogram of body weight administered daily by mouth. Isoniazid exerted a satisfactory effect on simple lymphomas, although spontaneous disappearance of this lesion may frequently occur. Fistulas also showed a good response, while caseous lesions responded slowly and there was a tendency for recurrence. Removal of the residual nodes in a sanatorium is recommended after termination of the isoniazid therapy. This method of treatment seems to be more rational and promising than early surgical intervention or early irradiation. Lymphomas of cherry size frequently disappeared completely. Surgical intervention should be considered only after failure of treatment with isoniazid for four weeks. Treatment of tuberculosis of lymph nodes, the duration of which may extend over a long period, should be adapted to each patient since personal and mental influences have a definite effect on the course of the disease.

Zeitschrift für Orthopädie, Stuttgart

84:1-176 (No. 1) 1953. **Partial Index**

*Completely Automatic Nailing of Fracture of Neck of Femur. G. Küntscher.—p. 17.
Measuring the Acetabular Angle in the Newborn. A. Ravelli.—p. 33.
Technique of Resections and Arthrodeses in Knee and Ankle Joints. A. Katthagen.—p. 36.
Development of Longitudinal Arch of the Normal Foot After Birth. P. Pitzen.—p. 44.
*Insidiously Progressing Metatarsal Fractures in Children. O. Popp.—p. 55.
Aseptic Necrosis of Head of Humerus. H. Jud.—p. 61.

Completely Automatic Nailing of Neck of Femur.—Küntscher describes a method of nailing the neck of the femur that he regards as simple and reliable. He shows that, because of the large muscles in the hip region, a plaster of Paris cast cannot counteract the mechanical tension forces that prevent healing of the bone; only a nail acting on the bone itself can do this. In a diagram showing two possible positions of the nail, he demonstrates that a nail tending toward the horizontal line does not attain adequate mechanical rigidity, because of the width of the medullary cavity and the weakness of the cortex of the bone. If, however, the nail is introduced in an extremely steep direction, it is securely wedged in the cortical tube, and slipping out is prevented by a transverse screw. Another disadvantage of the more horizontally directed nail is that it does not prevent torsion of the parts of the fracture, whereas such torsion is impossible with the nail in the more steep direction. Furthermore pseudoarthrosis has been known to develop with the more horizontally directed nail and has been corrected with a steep nail. The correct site for the drill hole is found by placing a (femur) nail on the antero-posterior roentgen exposure. This nail passes through the center of the head of the femur, and at the point of its intersection with the outer compact wall (corticalis), the drill hole should be made. The various steps of the insertion of the nail are described. Its line of direction coincides with that of the muscular traction and thus the mechanical conditions are more favorable than with any other method.

Insidious Metatarsal Fractures in Children.—Whereas insidiously progressing metatarsal fractures have long been known to occur in adults and are generally recognized, they have rarely been recognized in children. Popp presents the histories of six children, between the ages of 2½ and 14 years, who had such fractures. The clinical and roentgenologic aspects resembled those of march fracture in adults. It is assumed that these metatarsal fractures in children are not completely due to mechanical factors, but that predisposition, probably on the basis of rachitic or other metabolic disturbances, plays a part.

BOOK REVIEWS

Doctors, People, and Government. By James Howard Means, M.D. Cloth. $3.50. Pp. 206. Atlantic Monthly Press: Little, Brown & Company, 34 Beacon St., Boston 6, 1953.

This book is a discussion of some of the factors or forces that the author claims must contribute to the achievement, for the American people, of "the best medical service which science and art permit." Mainly, these factors or forces are those represented by existing formal organizations having a stake in "the health problem." The author's general goal is more sharply defined on page 63: ". . . the people are actually to get medical care as good as that which existing medical knowledge makes possible." To attain his goal all physicians would obviously need to have precisely equal ability and experience. The young physician could not have any patients, because that would mean that his patients are not obtaining this maximum quality of medical care that existing medical knowledge makes possible. No student of the social sciences would claim that the best could be uniformly available or that it would be possible to raise all below-average incomes up above the average. Presumably the author's ivory tower view results from his having spent his active life in a great medical school and a truly fine hospital. If he had been a practitioner instead of a teacher, he might have realized that the attainable goal is to improve minimum, average, and maximum quality levels of medical care.

The other great weakness of his book is his persistence in viewing all his "people" in just one of their organizational aspects—government. There can be little doubt that Dr. Means himself sets great store on the dignity and worth of the human individual; however, nowhere does he hint at the variations in the attitudes of individuals toward their own physicians, at the reactions of Americans to what they learn of the attitudes of Englishmen and Russians who are now living with some form of collective medicine, or at the wide variations among segments of the American people as to what "medical service" really means to them. The author obviously takes himself too seriously. Of Eisenhower's statement that he did not like the words "compulsory" and "socialized," Dr. Means asks, "Who in this country does?" (page 165). The facts seem to indicate that, for a number of years, persons who do like those words have been guiding government policy in numbers clearly disproportionate to those of similar belief among the electorate. It is in these matters of medical economics that Dr. Means does not express the opinions held by many able physicians.

The organization of the book is somewhat more rigorous than the title would indicate. In chapter 1 the author states that the medical world consists of government agencies (federal, state, and local), the medical education system, physicians and their organizations, and the persons who need medical care. The organizations that represent medicine and connect it with government and with the people are described: the American Medical Association, American Public Health Association, American Hospital Association, American Nurses' Association and National League for Nursing, American Association of Medical Social Workers, and the American National Red Cross. In chapter 2 he discusses the medical school. The pressure of requirements for admission to medical schools is a comparatively recent development, as there were formerly fewer applicants with only general educational backgrounds. He observes that medical schools have changed very little during the past half century, but they are learning that integration of courses and preparation for responsibilities (clinical, administrative, and educational) are as important as the teaching of isolated medical facts. This chapter is his best, as one would expect from a man with his background of so many years of teaching at the Harvard medical school.

Of the hospitals, he states that, although hospitals are of different kinds, some teaching is done in most of them, and the best medical education is afforded when medical students have the most contact with patients. He highly approves of the ward system used at his hospital (Massachusetts General, Boston) as giving good training to the student and superior medical care to the patient. In chapter 4 he contends that, although the people may need different physicians, one should maintain responsibility for the patient in any form of group practice or hospital practice. He contends that this desirable relationship is too often stifled by the fee-for-service; it causes the physician to take too many cases, to have too little time to think, to worry about preparing for his own retirement, to call patients to his office more than necessary; and it keeps some patients away. He observes that some of these objections can be removed by having professional grievance committees or a fixed fee schedule.

In chapter 5, "Are Our Medical Needs Being Met?" he contends that there is in this country a "shortage of [medical] personnel, shortage of facilities, irregular distribution of both, inadequate production of new personnel, inefficiencies in operation, mounting costs, and lack of organization for the best utilization of professional skills both in the promotion of health and in the provision of medical care." This statement may be based on a number of pronouncements emanating from Washington, from the committee on the nation's health, or from certain journalistic authorities on medical care. He offers no reasoned proof to support his contention; perhaps he assumes no proof is necessary other than his premise.

He is more moderate in stating his attitude on the role of government. Government should help, but not exclusively, with financial aid to medical schools and for other health care. He contends that the British national health system should be studied in relation to Britain only and observes further: ". . . in the United States it will be in the end the whole people, not the doctors alone, who will direct the course of events" (page 106). Regarding government medicine in the United States, he observes that we now have government medicine at national, state, and local levels, largely in the form of public health work, medical education, and hospital service, and, to a much smaller extent, in the realm of services of physicians. He sketches the activities of the U. S. Public Health Service, medical services in the armed forces, and in the Veterans' Administration. He finds that the provision of medical service for the dependents of members of the armed forces and for the non-service-connected disabilities of veterans pose questions of public policy.

In chapter 8, "American Attempts at Health Planning," most of his examples of adequate medical service are provided under group practice, often coupled with prepayment plans. The monopolistic aspects of cooperative health plans and their threat to the maintenance of free choice of physician does not bother the author. He concludes that the role of organized medicine has been negative and uses some of his sharpest language in criticizing the American Medical Association actions in 1932, 1937, 1948, and 1953. Investigation reveals, however, that the most positive aspect of the program of the American Medical Association from the standpoint of laymen is found in the improvement of the quality and quantity of medical care. The probability that a young woman will die during pregnancy, childbirth, and confinement today is only one-ninth the probability that her own mother would have succumbed a generation ago. This is an example of the positive program from the standpoint of the people. Taking medical education as another example, we can understand why Dr. Means is not particularly impressed with the contribution organized medicine has made in improving the quality of medical training, because the Harvard medical school could probably triple its enrollment of medical students without risking disapproval (because of lowered quality) by the American Medical Association. Nor does Dr. Means indicate

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

that he has carefully read the history of the American Medical Association's attitude toward voluntary health insurance, which it has never opposed. Regarding group practice (a number of past presidents of the American Medical Association and currently three of its trustees are group practice physicians), Dr. Means fails to distinguish between group practice *per se* and group practice coupled with monopolistic prepayment medical plans. We wonder what his attitude would be toward automobile insurance if his insurance company refused to indemnify unless he had his car repaired in a specified repair shop.

Finally, he gives his solution to a problem that he did not fully describe. His ideal solution could not be reached solely by government but by a cooperation of government and nongovernment medicine in realistic and flexible experiments. Dr. Means' ideal would be equality of care (via prepayment) in a medical system centered in a teaching hospital, united with a medical care plan and an adequate Blue Cross system, with premiums paid for those who could not afford to pay, with all doctors salaried, and all patients available for teaching. He is not concerned with the problem of providing the people of Jordan, Montana, and Kanab, Utah, with the best medical care, nor is he concerned with the fact that the American people choose to spend, on other items, $24 of their family budgets for every dollar spent for medical care. Dr. Means has not provided the broad prospective of the problem suggested by the title "Doctors, People, and Government." Moreover, the index reveals, in its selection of items, a lack of the broad reading that should have preceded such a generalized treatment.

The approach taken by the author will probably be apparent to all who read such statements on the jacket as: "The American people are not getting adequate medical care at a price they can afford. Organized medicine in the United States . . . is essentially a guild of doctors which seeks to preserve at all cost the specially privileged position of the medical profession. It is too little interested in co-operating with the Government to attain a national health program."

The Heart Beat: Graphic Methods in the Study of the Cardiac Patient. By Aldo A. Luisada, M.D., Associate Professor of Medicine and Director, Division of Cardiology, The Chicago Medical School, Chicago. Cloth. $12. Pp. 527, with 311 illustrations. Paul B. Hoeber, Inc. (medical book department of Harper & Brothers), 49 East 33rd Street, New York 16, 1953.

Dr. Luisada's long and broad interest in the numerous manifestations of activity of the heart is evident in his present volume, which illustrates the numerous approaches that have been developed, approaches to which he has contributed significantly. The book reviews techniques of recording the cardiogenic vibrations of the thoracic and abdominal walls; venous and intrathoracic pulsations and pressure tracings; pulsations in the aorta, arteries, and veins; radiographic techniques including roentgenkymography and electrokymography; and electrocardiography. It provides an introduction into these fields but unfortunately is often very sketchy. Many different techniques are mentioned and discussed only briefly. While this will not provide satisfaction to the scholar in the field, it will act as an open-sesame to students and others seeking a convenient approach to these topics, some of which are hardly known except to a small group active in the field. The survey of the literature is generally adequate and particularly valuable to the English-speaking physician since it gives many references to the German and Italian contributions.

In the second half of the book some of the techniques described in the first half are used in the analysis of the normal and diseased heart. In places the discussion is reduced to a mere cataloguing of conditions and situations; for example, the complex congenital malformations of the heart are treated in nine pages. Such treatment can not provide for an adequate discussion of the dynamics of these disorders. However, there are advantages in the conciseness that can provide an introduction to the use of the various available techniques. If the book helps to stimulate a renewed interest in such techniques as phonocardiography, phlebography and others, it will have adequately served its purpose. It is recommended for medical libraries, students of cardiology, and those interested in the use of instrumentation in heart disease.

Die Bewegungsbestrahlung. Von Dr. F. Wachsmann, Dozent für medizinische Physik, und Dr. G. Barth, Dozent für Strahlenheilkunde und physikalische Therapie, Universität Erlangen. Cloth. 36 marks. Pp. 192, with 124 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart-O; American agent, Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1953.

This monograph discusses all forms of therapy in which either the source or the target of the ionizing radiation is kept in motion during the treatment. The text is detailed, explicit, and clear. There is a wealth of well-reproduced photographs of apparatus to illustrate techniques, and the mathematical diagrams are drawn with exquisite precision. The bibliography fulfills the promise made in the preface of a complete coverage of existing literature, including very recent American and Scandinavian contributions. The book should be seen by every roentgenologist.

The Principles of Thoracic Anaesthesia Past and Present. By William W. Mushin, M.A., M.B., B.S., Director of Anaesthetics, Welsh National School of Medicine, Cardiff, and L. Rendell-Baker, M.B., B.S., M.R.C.S., Consultant Anaesthetist, United Cardiff Hospitals and Welsh Regional Hospital Board, Cardiff. Cloth. $9.50. Pp. 172, with 217 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1953.

This book makes more than one appeal to the reader. At first glance, it might be considered a historical account in the sense that the story behind modern anesthesia for thoracic surgery is told step by step, from the basic consideration of respiration itself to how one deals with the respiratory apparatus when necessary. Resuscitation is discussed at length, and the ancient devices that were useful in treating patients are described and well illustrated. Early apparatus for intubation are shown, particularly for use against diphtheric croup, and the attempts at anesthesia for operations on the thorax between 1888 and 1900 are illustrated and described. Methods of obtaining positive and negative pressures also are presented. Insufflation techniques (1907 to 1913) and automatic inflation (1909 to 1911) are adequately discussed and well illustrated.

Few, if any, of the methods used for the production of thoracic anesthesia have been overlooked. In fact, it is unlikely that any other account as complete as this has been written. Modern devices for producing anesthesia for thoracic surgery are reported in detail. There are illustrations and descriptions of devices from the United States, England, and other countries. A chapter develops the subject of tracheal and bronchial intubation and the control of secretions, with illustrations of almost all the devices, ancient and modern, that have been evolved for this purpose. Much space is given to bronchoscopy, and various lighted instruments for examination of the respiratory passages are depicted. Intratracheal tubes with inflatable cuffs, such as were used as long ago as 1893, are illustrated. A chapter is devoted to anesthetic agents and the absorption technique of general anesthesia. Appendix I is a copy of routine instructions for resuscitation as displayed in first aid boxes in Paris in 1822. Appendix II gives photographs of, and biographic notes on, 30 outstanding men who in the past have been instrumental in the progress made in thoracic anesthesia. Anyone interested in anesthesia for thoracic operations will find this book of value.

Extrasystoles and Allied Arrhythmias. By David Scherf, M.D., F.A.C.P., Associate Professor of Medicine, New York Medical College, New York, and Adolf Schott, M.D., M.R.C.S., Medical Officer in Charge of Cardiographic Department, Queen Mary's Hospital for East End, London. Cloth. $15.50. Pp. 531, with 213 illustrations, Grune & Stratton, Inc., 381 Fourth ave., New York 16, 1953.

This monograph dealing with the manifestations, significance, therapy, and mechanisms of ectopic impulse formation in the heart is the result of extensive experimental and clinical studies of old as well as more recent data. Following a unique historical review of the development of knowledge about cardiac irregularities in general is a systematic description of the many varieties of premature beats and of disturbances of rhythm caused by them. Special chapters deal with fibrillation and flutter of auricles and ventricles, with paroxysmal tachycardia, and with alternans of the heart. An exhaustive

discussion of the role of nervous factors and of drugs and electrolytes in the formation and suppression of ectopic beats is included. A final section is devoted to the authors' concept of the mechanisms of ectopic impulse formation.

The careful reader will find in this book an interesting mixture of a well-rounded presentation of generally accepted principles together with an accumulation of data serving to support the one-sided viewpoints of the authors. This is reflected in the text as well in the selection of illustrations. A great deal of the latter are poor reproductions of previously published material. Many of the electrocardiographic tracings permit alternative interpretations, not mentioned by the authors, and some (fig. 39, 140, and 154) are apparently examples of misinterpretation. The elaborate diagrams on page 106 confuse rather than illuminate a simple concept. Inconsistencies become obvious when one tries to apply the definitions and criteria of the authors to some of the reproduced material. Thus, the proposed definition of an "extrasystole" fails in instances like figs. 125, 126 and 130, and the strict criteria for the diagnosis of retrograde P waves set forth on page 132 are not considered when the authors deal with their own material (fig. 104). The definition of "interference with dissociation" as contrasted to parasystole is inadequate and misses the point. Extensive reference is made throughout the book to previous publications of the authors and to neurophysiological data in the section on mechanisms, in order to fortify the concept of repetitive response to a single stimulus. The role of other possible mechanisms such as re-entry is minimized. The older bibliography is almost complete and summarized in an excellent manner. Quotations of more recent pertinent work are meager and obviously selected to fit the needs of the presentation. Thus, Rosenblueth's studies on circus movement in the atria are ignored. A discussion of the latter data could more appropriately fill the ample space devoted to a forced and unnecessary polemic concerning priority in the introduction of the aconitine method.

As a review of historical facts, a summary of older European work, and a reference book for clinical and therapeutic aspects of premature beats and associated disorders, this monograph is outstanding and therefore a most valuable addition to the library of any cardiologist, but, to gain more objective viewpoints on the still obscure mechanism of ectopic impulse formation, the reader should, in addition, consult the writings of other equally competent workers in the field.

Live and Help Live. By Ruth Goddard, Edwin D. Martin, and Lewis Spears. Cloth. $2.60. Pp. 306, with illustrations. Banks Upshaw & Company, 703 Browder St., Dallas 1, 1953.

Good, practical advice on safety practices is presented in this volume, which is directed at children in the upper grades of elementary schools. The language is appropriate to such groups, and the discussions are sufficiently concise to permit satisfactory assimilation of the presentations. An especially good feature is the inclusion at frequent intervals throughout the text of stimulating questions based on the topic under consideration. In addition to a general discussion of the many different special agencies responsible for community safety, there are chapters on home safety, school safety, first aid, safety in recreation and during vacations, and traffic safety.

The inclusion at the end of each chapter of a full-length 15-minute radio program that can be used for classroom discussion or for presentation over the school public address system deserves special mention. These programs were obtained from the Texas School of the Air and present the various topics in a lively, interesting manner that should insure added understanding and cooperation.

A Ciba Foundation Symposium: Visceral Circulation. Editor for Ciba Foundation: G. E. W. Wolstenholme, O.B.E., M.A., M.B. Assisted by Margaret P. Cameron, M.A., A.B.L.S., and Jessie S. Freeman, M.B., B.S., D.P.H. Cloth. $6.50. Pp. 278, with 72 illustrations. Little, Brown & Company, 34 Beacon St., Boston 6, 1953.

This volume consists of 25 short papers and informal discussions that constituted the 1951 Ciba Symposium on Visceral Circulation. The subjects discussed fall into four broad categories: visceral vascular architecture, general factors in blood flow regulation, regional blood flow regulation, and interaction of general and visceral circulations. Authorities in both preclinical and clinical sciences from the United States, Canada, Great Britain, Switzerland, Belgium, Sweden, Denmark, and Germany took part. In view of their specialized nature, these discussions will be of interest chiefly to the research worker.

Communicable Disease Control: A Volume for the Health Officer and Public Health Nurse. By Gaylord W. Anderson, M.D., D.P.H., Mayo Professor and Director, School of Public Health, University of Minnesota, Minneapolis, and Margaret G. Arnstein, R.N., M.P.H., Sc.D., Chief, Division of Nursing Resources, United States Public Health Service. Third edition. Cloth. $6.50. Pp. 500, with 8 illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1953.

This valuable book has previously received wide acceptance. In the third edition an attempt has been made to incorporate new knowledge and to remove that which is outdated, since the communicable diseases have declined in importance in the last 50 years because of the development of both new preventive and therapeutic measures. As the authors wisely point out, no modern health department program can be built around the communicable diseases. Nevertheless, a number of the infectious disorders still are not controlled. The first section of this book deals with the general problems of the infectious disorders, and the second section discusses these conditions specifically. Later chapters have to do with diseases spread through arthropods. Bibliographical material is attached to each section. Epidemiology is extensively discussed. This book will continue to be an extremely worth-while publication for students, nurses, physicians, and all those in the public health field.

Coroners in 1953: A Symposium of Legal Bases and Actual Practices. Paper. $2. Various pagination. National Municipal League, 299 Broadway, New York 7, 1953.

In 1941 the National Municipal League, the American Medical Association, the American Academy of Forensic Sciences, the American Bar Association, the American Judicature Society, and the National Civil Service League jointly published and sponsored a pamphlet entitled "A Model State Medicolegal Investigative System." That study outlined a model law and discussed the experience under a modern system such as exists in Massachusetts, Maryland, and Virginia. This new publication surveys the practical day-to-day functioning of existing coroner systems in 36 other states. It bases its contents on the answers to questionnaires sent to state universities, bureaus of governmental research, institutes of public service, individual coroners, individual medical examiners, and tax payers' alliances; the result is a valuable compendium of information about the office of coroner as it is currently administered. Any physician interested in improving the facilities for medicolegal investigations in his state will be rewarded by a study of this publication.

The Parietal Lobes. By Macdonald Critchley, M.D., F.R.C.P., Neurologist, King's College Hospital. Cloth. $13.50. Pp. 480, with 150 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Avenues, Baltimore 2; Edward Arnold & Co., 41-43 Maddox St., London, W.1, 1953.

This is an outstanding monograph describing in detail the structure, functions, and particularly the symptomatology of lesions of the parietal lobe. It has been prepared by one of the world's outstanding neurologists and is based not only on the international literature on the subject but also on the author's extensive experience. The first two chapters are concerned with the anatomy of the parietal lobe and experimental physiological observations. The remainder of the monograph is concerned with various aspects of parietal symptomatology. The book is well illustrated and has an extensive bibliography and an index. For years to come, this may well be the classical reference work on the parietal lobes. Photographs of 10 outstanding neurologists who have been interested in the parietal lobes are included.

QUERIES AND MINOR NOTES

PREVENTIVE MEDICINE FOR THE INDIVIDUAL

TO THE EDITOR:—*A couple, in their late 30's, want semiannual "complete examinations" for cancer protection and general preventive purposes. What constitutes ideal preventive medicine practice by today's standards?*

David R. Bryan, M.D., Stowe, Vt.

ANSWER.—A comprehensive history should be taken at each examination regarding any signs or symptoms showing departure from normal living conditions. In addition to her bimanual pelvic examination, the wife should have a cervical cell smear (Papanicolaou) test each time. If either is a heavy smoker, chest roentgenograms should be made at six-month intervals. These would also reveal tuberculosis and some forms of heart disease. All abnormal lung shadows necessitate identification. Annual rectal palpation of the prostate is good practice, even though the husband is not yet in the accepted "prostate age." If the semiannual urinalysis suggests the presence of sugar, a fasting blood sugar examination should be made. Any abnormal heart sounds should be identified by an electrocardiogram. Gastrointestinal symptoms necessitate x-ray examination. Any painless persistent lump in the breast or other soft tissue should be removed for microscopic examination. Any mole or wart subjected to repeated irritation or friction should be removed and microscopically examined, as should any wart or mole seen to be changing in size or color. A sore that does not heal in the time it should if due to injury, and especially if of painless character, should be biopsied. There should be no "watchful waiting" of any symptom the cause of which can be identified by the proper examination or test.

ENTEROBIASIS DURING PREGNANCY

TO THE EDITOR:—*A 26-year-old multigravida has had oxyuris vermicularis for more than a year that has been treated unsuccessfully with enteric-coated gentian violet tablets (Enseals), p-benzylphenyl carbamate, and enteric-coated diphenhydramine capsules (Benadryl Emplets). Her two children responded promptly to treatment. I have instructed her in hygienic routine to prevent reinfection. She is now three months pregnant. Since she has had three spontaneous abortions previously, I am afraid to give hexylresorcinol retention enemas, and this drug in my experience has been very disappointing when given orally. Do you have any suggestions?*

M.D., Tennessee.

ANSWER.—Oxyuris vermicularis infection or enterobiasis is persistent and difficult to cure under the best of circumstances. In the early months of pregnancy in a patient who has had spontaneous abortions, the problem is most difficult. Since the physician is reluctant to give hexylresorcinol by retention enema, it could be given orally. The dose is 1.0 gm. given in the form of hard coated tablets that should not be chewed. The drug should be given in the morning before breakfast. No food should be taken for at least four hours after therapy. A mild saline purge (sodium sulfate or phosphate but not magnesium sulfate) should be given four hours after the drug. Hexylresorcinol is contraindicated in the presence of ulceration of the stomach or bowel or in patients having gastroenteritis. All members of the family should be treated simultaneously. If, in the opinion of the attending physician, the condition of the patient will permit, a small cleansing enema of not more than 500 cc. of saline solution (0.9%) in which is suspended about 25 gm. of a synthetic detergent may be given. On alternate nights for a total of three times this may be repeated. As a further precaution against reinfection, the synthetic detergent should be used for cleaning all personal laundry, bed linen, bathrooms, and fixtures that may become contaminated throughout the home.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

SMOKING AND DRINKING DURING PREGNANCY

TO THE EDITOR:—*How much nicotine does a fetus receive when the mother is a chain smoker? How much alcohol does a fetus receive when a mother drinks enough to be intoxicated each day?*

Leila D. Denmark, M.D., Atlanta, Ga.

ANSWER.—The amount of nicotine that the fetus receives when the mother is a chain smoker has not been determined. Some experimental studies have been carried out on animals that show that the stillbirth rate of animals exposed to cigarette smoke in the equivalent of 20 cigarettes per day was 10 times as great as that of the controls. Nevertheless, these results are not necessarily applicable to human subjects. Sontag and Wallace recognized that a consistent finding during human adult smoking was tachycardia. They felt that the fetal heart rate might be an index of the transmission of nicotine across the human placental membrane during maternal smoking. In nicely controlled observations before and during maternal smoking, they found an actual rise in the fetal heart rate. This change they felt indicated that the toxic products of smoke do pass through the human placenta and enter the fetal circulation. The rise in the fetal heart rate was similar to that produced during adult smoking, particularly in women who inhaled. Therefore, until further studies are carried out to show that excessive smoking is not harmful in pregnancy, it would be wise to advocate minimal, if any, smoking. It would be difficult to know how much alcohol is received by the fetus when a mother is intoxicated every day. Goodman and Gilman stated that alcohol differs from most foods in that it is unchanged in the intestines and is absorbed as such. All organs and fluids of the body contain alcohol within a few minutes after it is ingested. It also gains ready access to the fetal circulation. The distribution of alcohol in various tissues is fairly uniform.

USE OF ASCITIC FLUID

TO THE EDITOR:—*I hear that physicians in India are using ascitic fluid to inject into other patients intravenously. It is first autoclaved. What are the dangers? Could such fluid be stored? Our work is mostly charity work here. Very seldom does one get permission for a blood transfusion. Plasma is ordinarily not available, nor can we afford the expensive special solutions to take the place of these.*

H. E. Dester, M.D., India.

ANSWER.—Because of the excellent facilities for obtaining, processing, storing, and administering plasma and whole blood transfusions in this country, the necessity of using ascitic fluid has never arisen. Articles have appeared in European literature concerning this matter (Emmrich, R., and Fliege, H. J.: *Med. Welt.* **20**:931-933 [July 28] 1951; Arduini, V.: *Gior. clin. med.* **31**:885-894 [July] 1950). If ascitic fluid is withdrawn under sterile conditions from patients with cirrhosis not related to protozoal infestation, is added to the proper anticoagulant-preservative mixture, and is stored under the same conditions as whole blood (42 C) for a relatively short time (8 to 10 days), there should be no objection to its use when plasma and whole blood are not available. The blood serological test for syphilis of the donor should be negative, and the ascitic fluid should be similarly tested. Ascitic fluid will add protein, especially albumin, to an undernourished patient, and as far as is known, there are no noxious agents in ascitic fluid. Fluid with a specific gravity over 1.015 usually indicates a superimposed inflammation. Hemorrhagic ascitic

fluid may be due to septic or tuberculous peritonitis or to previous bloody taps, and should be discarded. Autoclaving will insure sterility. The dangers are related to lack of aseptic technique, possible unknown parasitic infestation in tropical countries, tuberculous infection, and undetected malignancy.

CELLULITIS AND LEUKEMIA

TO THE EDITOR:—*A 49-year-old man, who was apparently well and had been doing heavy manual labor for years on the same job, was struck on the shin with a piece of wood that broke the skin. In the next 10 days his leg became infected, swollen, and very painful, and he was hospitalized. In the meantime, he was treated with hot packs of magnesium sulfate and penicillin but failed to improve. Ten days later he was admitted to a hospital where a diagnosis was made, first of cellulitis and on the second day of myelogenous leukemia. The patient died 27 days later. Did this accident precipitate his death in any way?*

Charles Bate, M.D., Tulsa, Okla.

This inquiry was referred to two consultants, whose respective replies follow.—ED.

ANSWER.—In the absence of information regarding either the clinical course of this patient during the last 25 days of his life or the postmortem findings, it is not possible to estimate the extent to which the injury and the infection that complicated it may have contributed to death. It is not clear whether death resulted from the spread of the infection of his leg, from leukemia, or from some entirely unrelated condition.

If the infection remained stationary or subsided and if death resulted from a rapid and overwhelming exacerbation of leukemia, there is no apparent reason to believe that the accident was causally related to death. In this connection consideration should be given to the possibility that the elevation in the leukocyte count that gave rise to the diagnosis of myelogenous leukemia was a leukemoid reaction to infection rather than to leukemia. A leukemoid reaction may simulate leukemia closely, with leukocyte counts in excess of 100,000, immature white blood cells, anemia, nucleated red blood cells, hemorrhage, splenomegaly, and lymphadenopathy (Krumbhaar). Thus if the patient did die of spreading infection with septicemia, he may have had a leukemoid reaction rather than leukemia. In that event, the accident that caused the infection should be regarded as the primary cause of death.

Still another relevant consideration concerns the possibility that the patient died of an infection that was caused by the accident and one to which the patient was abnormally susceptible by reason of an unsuspected, although already established, leukemia. It is a fact that apparently healthy persons may be found to have well-established leukemia. In such an event what are the chances that the leukemic person is hypersusceptible to infection? Certainly the ability of a person to resist infection depends to a considerable degree on the presence of normal myeloid tissue. Strumia and Boerner have shown that the more immature the granulocytes the less effective is their phagocytic activity. In the absence of normal myeloid tissue, resistance is greatly impaired (Jaffe). Thus it is possible that this man's death was due to the accident in that it resulted in an infection that he was unable to overcome because of his leukemic state. This possibility must be regarded as remote, since it is unlikely that he would be "apparently well" while suffering from such an advanced stage of leukemia. It probably could be equally well argued that the infection might be expected to improve or to cause a temporary remission in his leukemic state, since a number of such cases have been reported (Jaffe).

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Strumia, M. M., and Boerner, F.: Phagocytic Activity of Circulating Cells in Various Types of Leukemia, Am. J. Path. **13**: 335, 1937.

ANSWER.—To answer this question more data would be desirable, including the results of bacteriological studies of the wound drainage and blood cultures, whether the leukemia was acute, subacute, or chronic granulocytic, and the results of a necropsy. From the data given, it seems probable that infection, which would not have occurred had there not been the accident, was the direct cause of death, and that the leukemia was a contributing cause of death by lessening resistance to infection. Certainly, the injury had nothing to do with the development of the leukemia. If at necropsy, death was found to be due to a major hemorrhage, leukemia was probably the chief factor. If death was due to the infection itself, the injury would appear to have been the major factor.

TUBERCULOUS PERITONITIS

TO THE EDITOR:—*A 7-year-old boy of nearly normal stature and weighing 25 kg. is suffering from tuberculous peritonitis. Is any new treatment known that would save his life?*

Ponteredra, Spain.

ANSWER.—Vigorous chemotherapy should be instituted promptly for the patient in question with (1) streptomycin, 0.75 gm. daily by intramuscular injection; (2) isoniazid, 100 mg. twice daily; and (3) sodium *p*-aminosalicylate, 8 gm. daily divided in two or three doses. The sodium *p*-aminosalicylate should be given only if the patient can tolerate this drug without serious gastrointestinal disturbance. If he responds well to the above treatment, the streptomycin should be reduced to two injections per week and the other drugs given in the same amounts daily. The treatment should be carried on without interruption for at least six months to one year. In any case, treatment should not be discontinued until several months after all evidence of disease has disappeared. A mixture of streptomycin and dihydrostreptomycin may be used in place of streptomycin alone to decrease possible toxic effects. Calcium *p*-aminosalicylate may be used instead of the sodium salt for the same reason. The doses of streptomycin and isoniazid may be increased by 25% or even 50% above those mentioned if the poor condition of the patient warrants maximum dosage. The prognosis of tuberculous peritonitis alone is not unfavorable, but in children it is frequently associated with dissemination of the disease, which makes the prognosis much worse. Even in disseminated tuberculosis in children, the prognosis is reasonably good provided vigorous chemotherapy is started before the patient is in a terminal condition.

HIRSUTISM AND SCANTY MENSTRUATION

TO THE EDITOR:—*A 35-year-old married woman had regular menstrual periods that were quite profuse until five years ago. Since then they have gradually decreased in amount until now they are scanty and irregular. Coincidentally with the decreased menses a profuse downy growth of hair has covered her face, and now some of the hairs are turning black. Are these events of endocrine origin? What therapy will clear up the hirsutism?*

M.D., California.

This inquiry was referred to two consultants, whose respective replies follow.—ED.

ANSWER.—The increasing hirsuitism, together with the increasing scantiness of menstruation, suggests an adrenal causation. Since no mention is made of obesity or sterility or of large cystic ovaries, it is assumed they are not present, so that the Stein-Leventhal syndrome can be eliminated. Again, since there is no mention of defeminization symptoms such as regression of the breasts or complete amenorrhea or of such masculinization changes as deepening of the voice or hypertrophy of the clitoris, and since there is presumably no sign of an ovarian tumor, an arrhenoblastoma or other maculinizing ovarian tumor can scarcely be suspected. Because of the hypomenorrhea a basal metabolism determination would seem advisable, as there may be no connection between the menstrual scantiness and the hirsutism, but especially important would seem to be determination of the 17-ketosteroid excretion, pyelography, and possibly air injection x-ray studies in an effort to rule out adrenal structural lesions. However, in the commonest type of hirsutism all such studies reveal no

abnormalities, the hair excess being apparently due to a functional disturbance of the still unknown cells concerned in hair growth and distribution but assumed to be located chiefly in the adrenal cortex. No hormonal therapy is effective in such cases, and reliance must be put on such cosmetic measures as electrolysis and depilatories, depending on the location and extent of the hairy overgrowth.

ANSWER.—It is impossible without further evidence to give definite answers to the questions that have been raised. A marked change in the character of the menstrual flow at the age of 35 years should be thoroughly investigated. The onset of scanty and irregular menstruation at this age in a woman who has previously had regular and profuse menstrual periods could be associated with a definite glandular change. It is important that the patient be carefully examined, with particular attention to the character of the hair growth and also careful examination of the clitoris to determine whether or not any increase in size has taken place. Several determinations of the 17-ketosteroid excretion should be carried out. If the figure is consistently high, it suggests the possibility of overproduction of androgen by the adrenal cortex or by the ovaries. The abdomen should be carefully examined to make sure that no tumor can be felt in the region of either kidney. A careful pelvic examination should be carried out to exclude the possibility of a tumor in the region of either ovary. Your attention is directed to reports that occur from time to time on the subject of hirsutism in the *Journal of Clinical Endocrinology and Metabolism.*

PREVENTION OF TETANUS

TO THE EDITOR:—*Recently I served as physician to an expedition into the wilderness area of Colorado. In view of the large number of horses employed, I was concerned about the possibility of tetanus. How long will tetanus antitoxin and tetanus toxoid remain serviceable without refrigeration? I tried keeping the vials in a thermos bottle full of cold water, but apparently the caps will not stand immersion safely.*

Robert O. Knox, M.D., Fort Logan, Colo.

ANSWER.—Tetanus antitoxin stored at 37 C loses little if any potency in a 12 week period, and after 12 months it still retains about 70% of its potency. Storage for 12 months at room temperature causes very little deterioration, since from 80 to 90% of the original potency remains after this period. Tetanus toxoid, both purified and crude, is comparatively stable. There is a tendency for the limit of flocculation values to decrease or disappear in from 6 to 12 months at 37 C, but animal tests indicate little if any decrease in potency. From a practical standpoint it would appear that either tetanus antitoxin or tetanus toxoid could easily be carried in a thermos bottle without liquid of any sort. This would protect them from extreme heat during the day and possibly also from freezing during the night. Although freezing does not harm tetanus antitoxin and probably does not cause deterioration of toxoids, it will disturb the alum-precipitated preparations so that uniform mixing is no longer possible.

CANCER AND PREGNANCY

TO THE EDITOR:—*A woman, aged 34, had a left radical mastectomy a year ago for an early cancer. She took the fact of her cancer extremely well until she found out that she is pregnant again. What can be done to reassure her?*

Walter Shifton, M.D., Albion, N. Y.

ANSWER.—There is no unanimity of opinion concerning the relationship of pregnancy and cancer of the breast. Many authorities believe that pregnancy stimulates the growth of an existing breast cancer or its metastases. Others think that the environment for cancer is improved by pregnancy but that there is no direct stimulation of cancer cells. Women who have had a cancer of the breast should probably be advised to avoid a pregnancy until sufficient time has elapsed to decrease the likelihood of recurrences. This patient should have a very careful examination, including a roentgenogram of the chest, to eliminate the possibility of recurrences and metastases. She should then be reassured that pregnancy will not stimulate the growth of a neoplasm after a successful mastectomy. Following delivery the engorgement of the remaining breast and lactation should be suppressed.

CERVICAL RIB WITH SYMPTOMS

TO THE EDITOR:—*A woman, aged 60, suffers from symptoms of a left cervical rib. About eight weeks ago, on the advice of a neurosurgeon, the anterior scalenus muscle was cut on the left side. This brought no relief. Should the left cervical rib be removed surgically? Is there any further medical treatment with hope of success? Should the brachial plexus be injected?* *Irving S. Snow, M.D., New York.*

ANSWER.—In doing scalenotomy for cervical rib, it is also necessary that the fibrous bands beneath the scalenus muscle be thoroughly dissected so that at the end of the operation the brachial plexus as well as the subclavian artery are thoroughly freed of all pressure. Actually resection of the scalenus muscle is only a preliminary step in this operation for symptom-producing cervical ribs. If the operation has been done in the manner described, then certainly the next step is to remove the cervical rib itself. This can be done either from the anterior or the posterior approach. This consultant prefers the anterior approach. No medical treatment is known that will offer any success in a case like this. Alcohol should never be injected into the brachial plexus for the relief of pain.

ASTHMA

TO THE EDITOR:—*An allergist has recommended three x-ray treatments one week apart for bronchial asthma for a 5-year-old child. What data if any do you have on such treatment for asthma?* *D. H. Ecke, M.D., Vandalia, Ill.*

ANSWER.—X-ray treatment for asthma was used as early as 1909 (Schilling, F.: *Lancet* **1**:1780, 1909). In general the methods have included single and multiple doses, light to massive exposures, varying types of filtering, and exposure of various parts of the body, such as the mediastinum, lung parenchyma, spleen, and pituitary. The results are not phenomenal but may be helpful in some cases, particularly when the allergic approach and usual methods have failed. It would not be justified as the first therapeutic approach and particularly in a child 5 years old. The writer is referred to the following references for details:

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COMBINED INJECTIONS

TO THE EDITOR:—*It is often necessary to administer penicillin and tetanus to a child who has been injured. Can penicillin and tetanus be mixed in the same syringe? If so, what types of penicillin and tetanus can be mixed? Also, can penicillin and phenobarbital be mixed in the same syringe?*

M.D., Colorado.

ANSWER.—The inquiry does not specify whether it refers to active ("booster dose") or passive immunization. Nevertheless in either instance tetanus toxoid and penicillin or tetanus antitoxin and penicillin can be injected in the same syringe. Any form of penicillin (except penicillin in oil) intended for intramuscular injection could be used. Procaine penicillin would probably be selected. Penicillin and phenobarbital could also be combined in a syringe for injection if there was any proper reason for doing so.